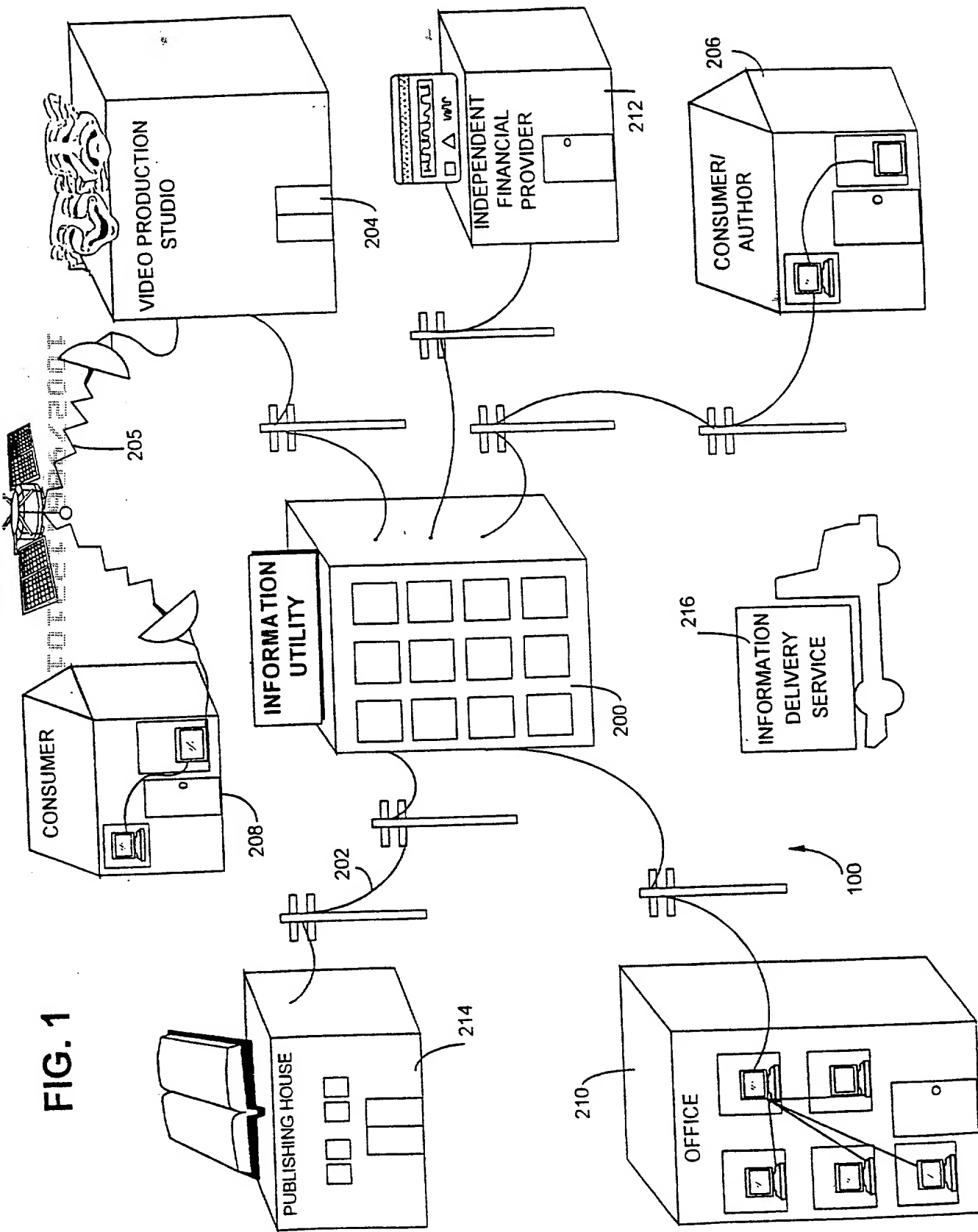


FIG. 1



TO VDE PARTICIPANT N

TO VDE PARTICIPANT 1

FIG. 1A

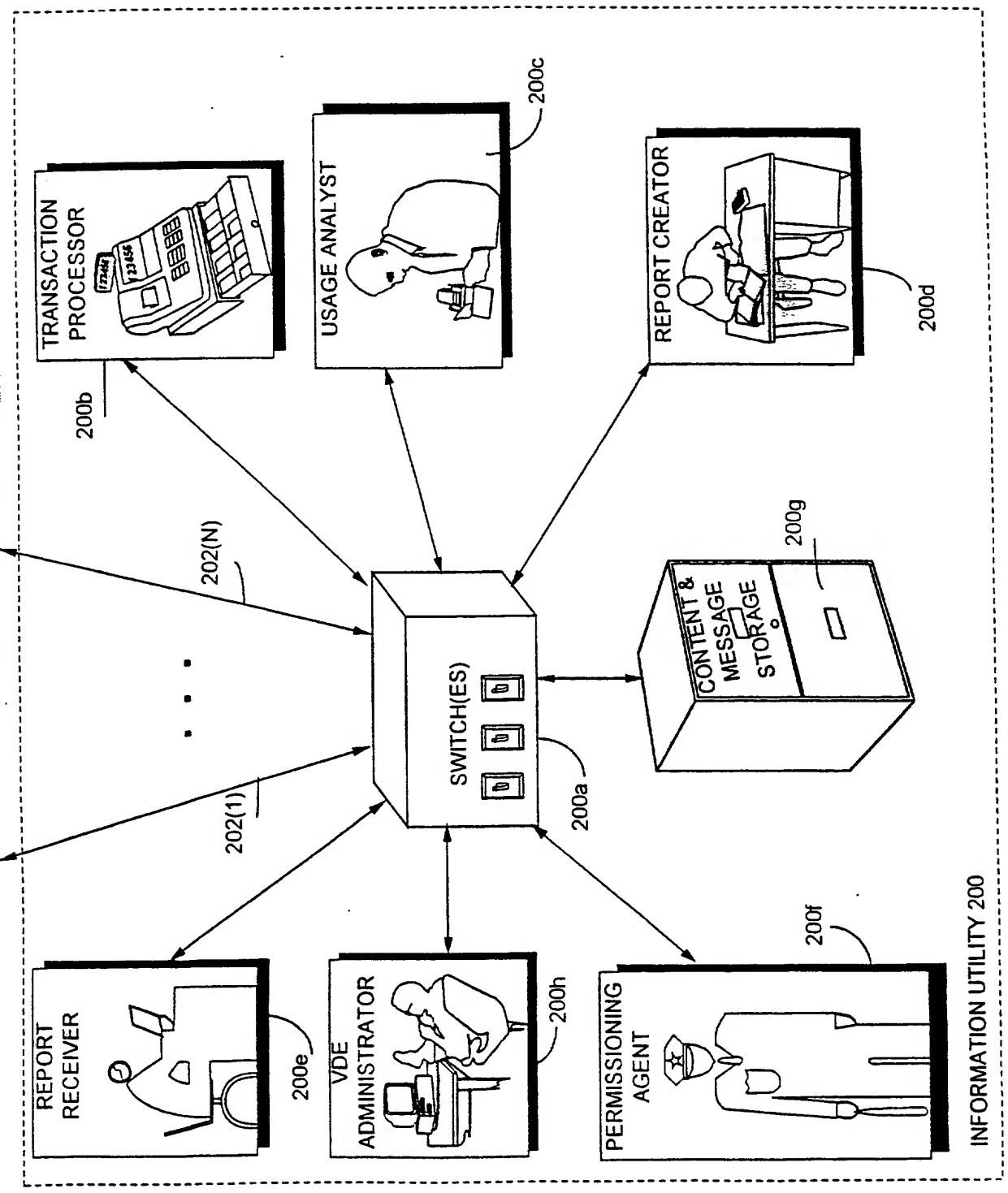


FIG. 2

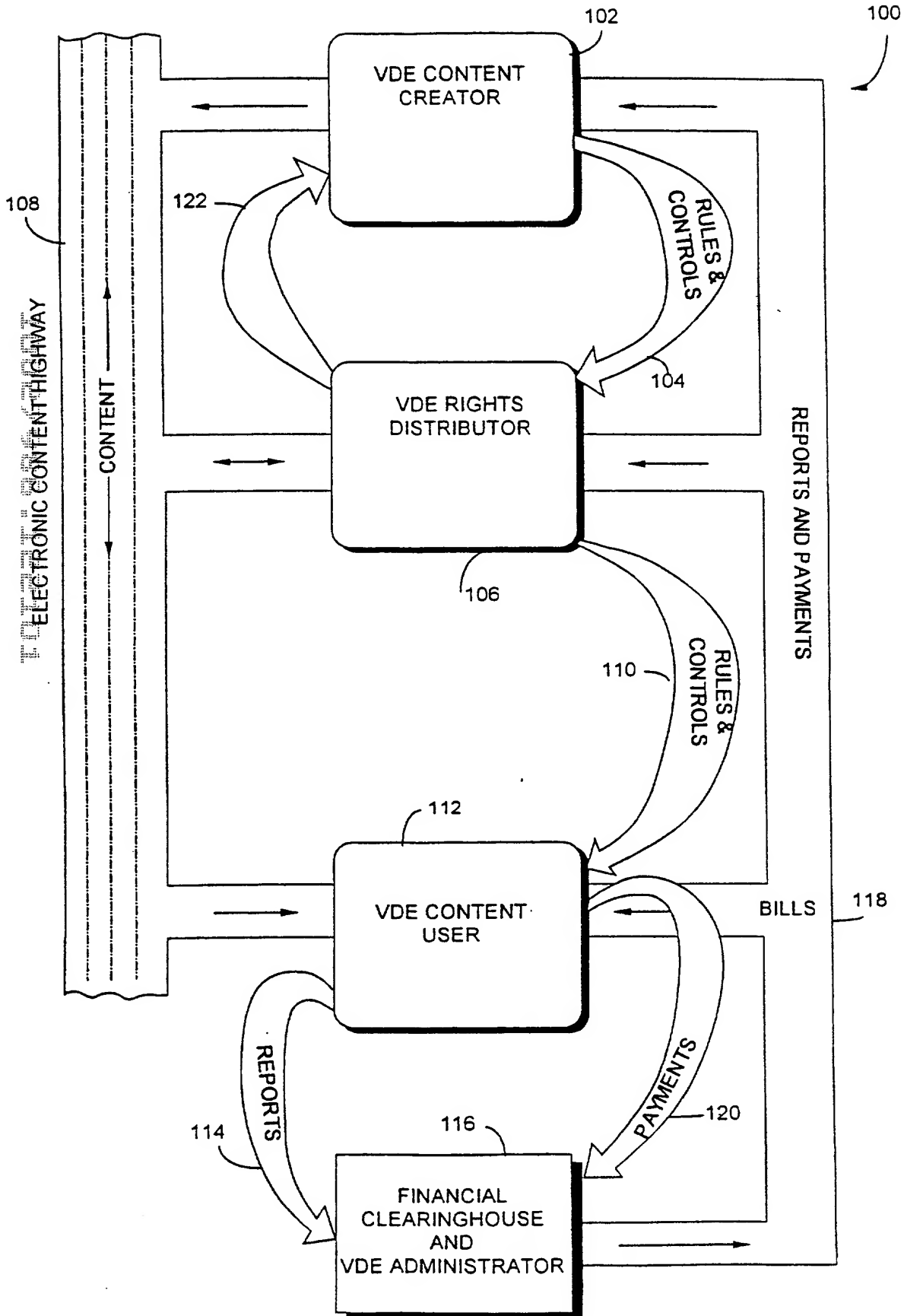


FIG. 2A

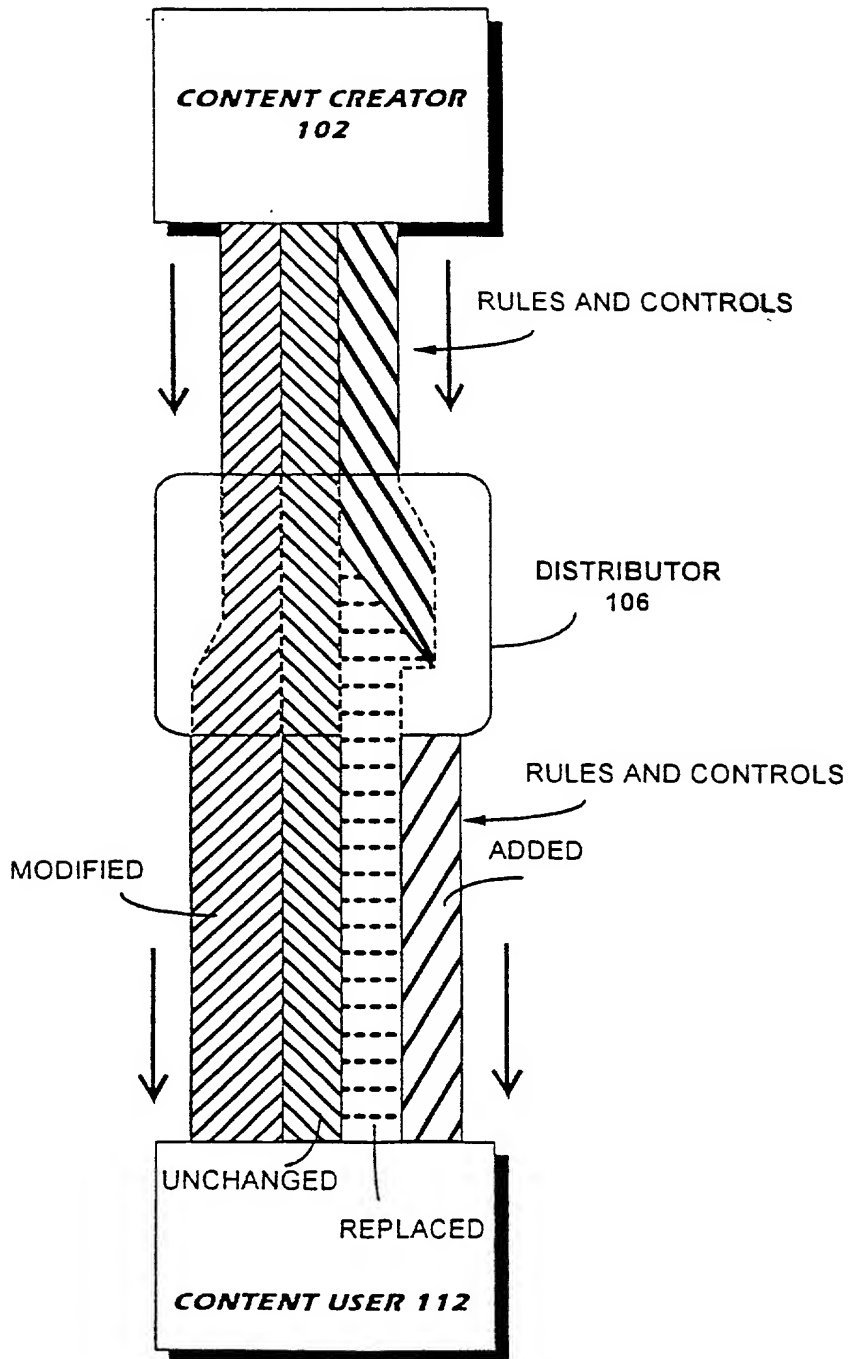
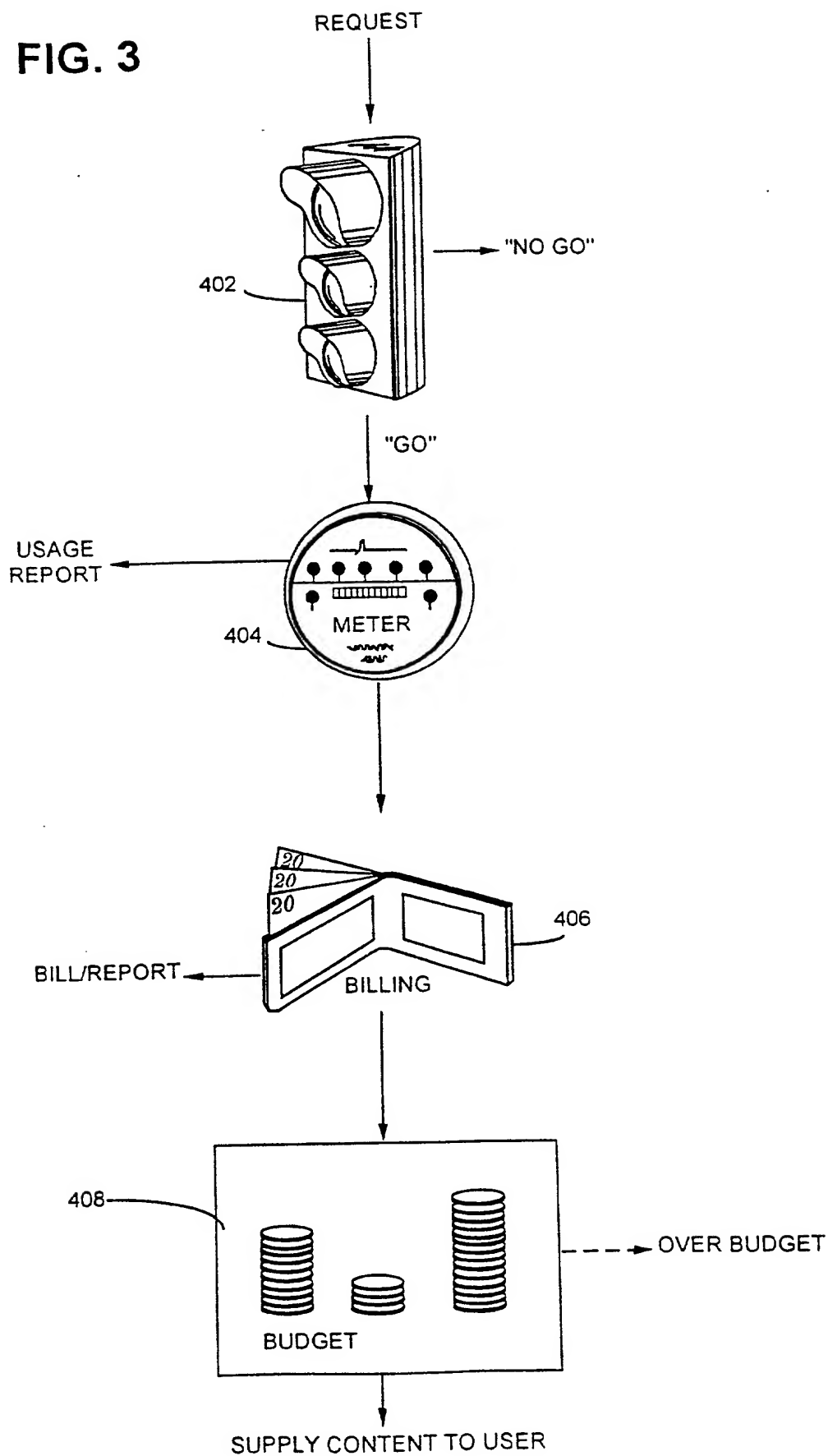


FIG. 3



10027986 122104
FOI b7E b7C b7D

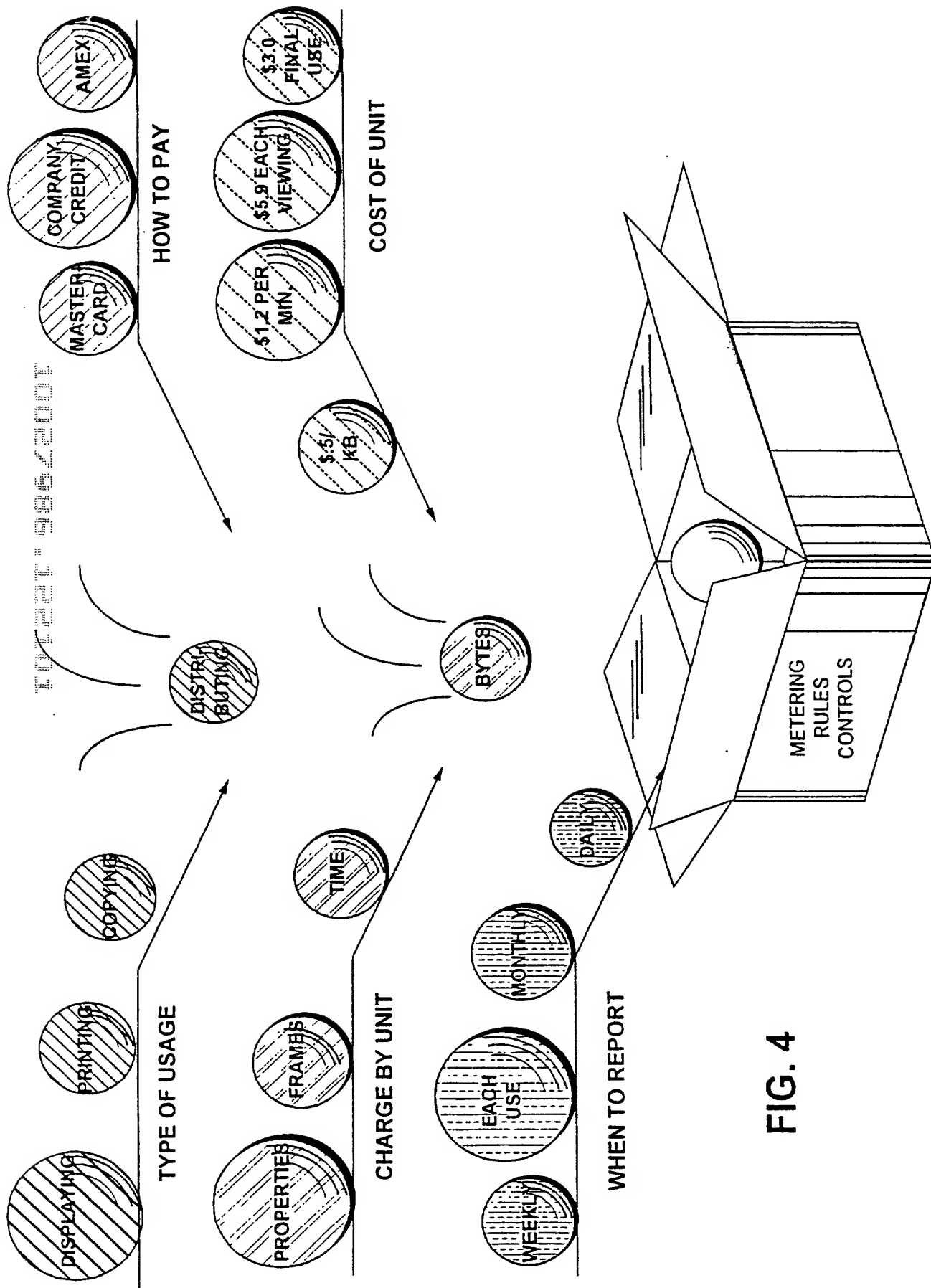
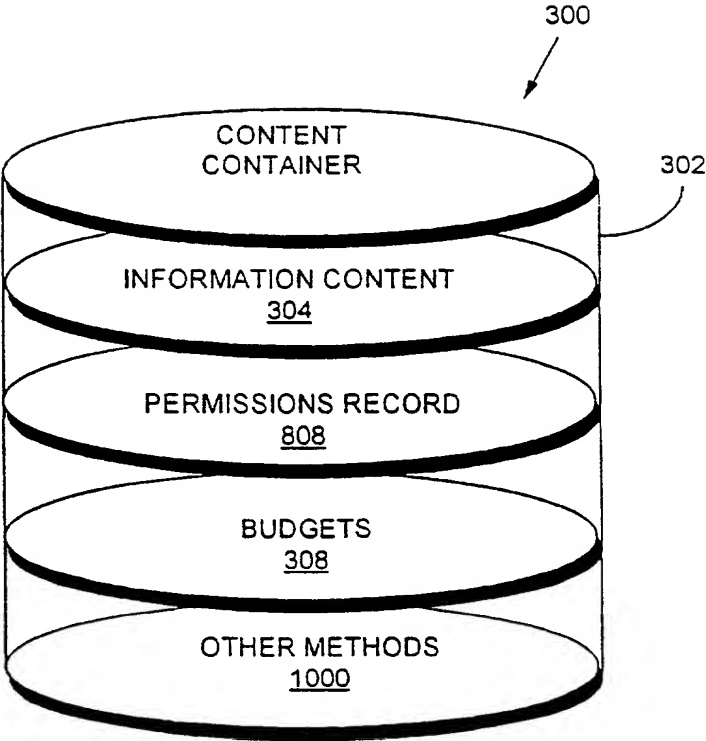


FIG. 4

FIG. 5A



10027926, 122101

FIG. 5B

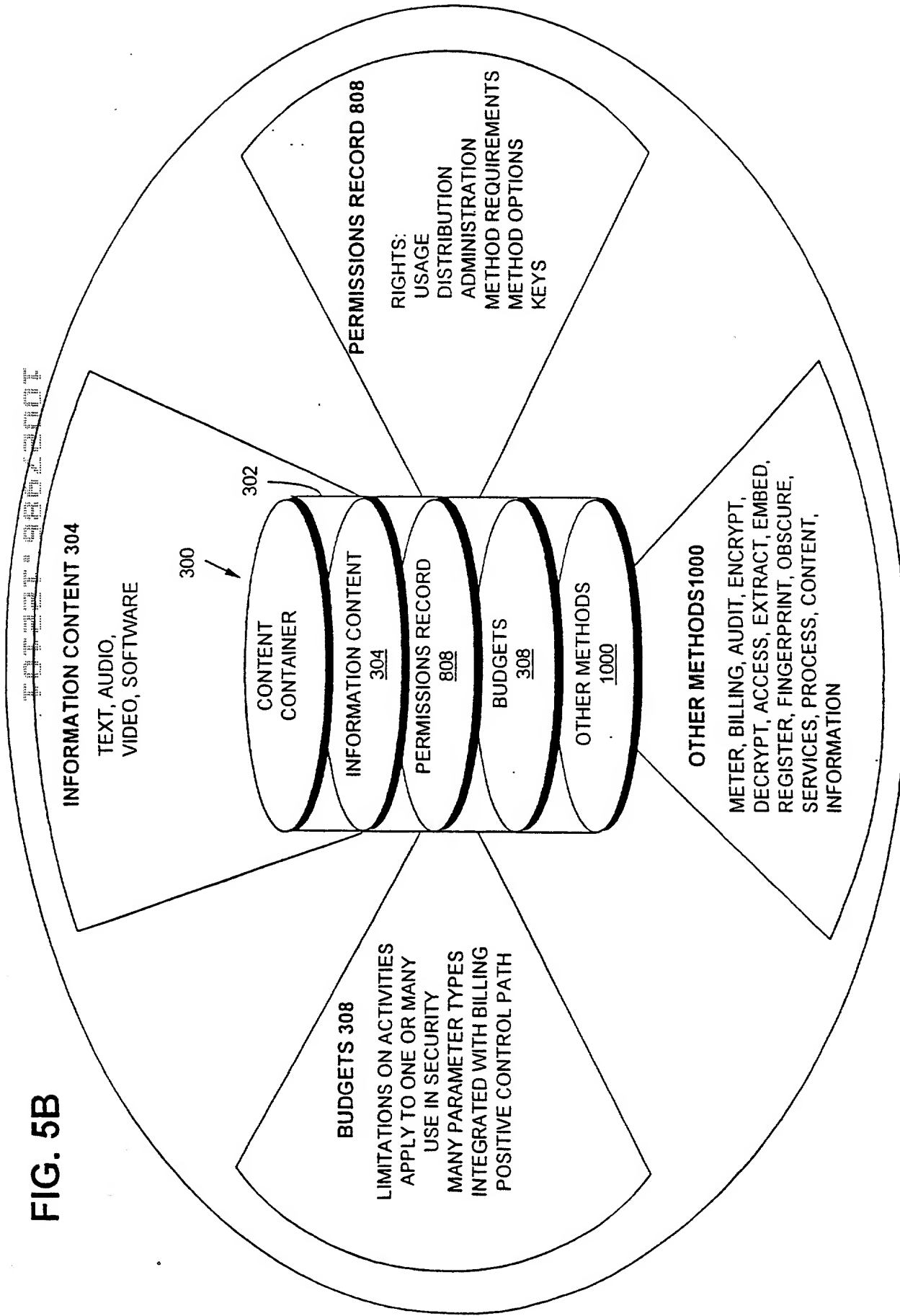
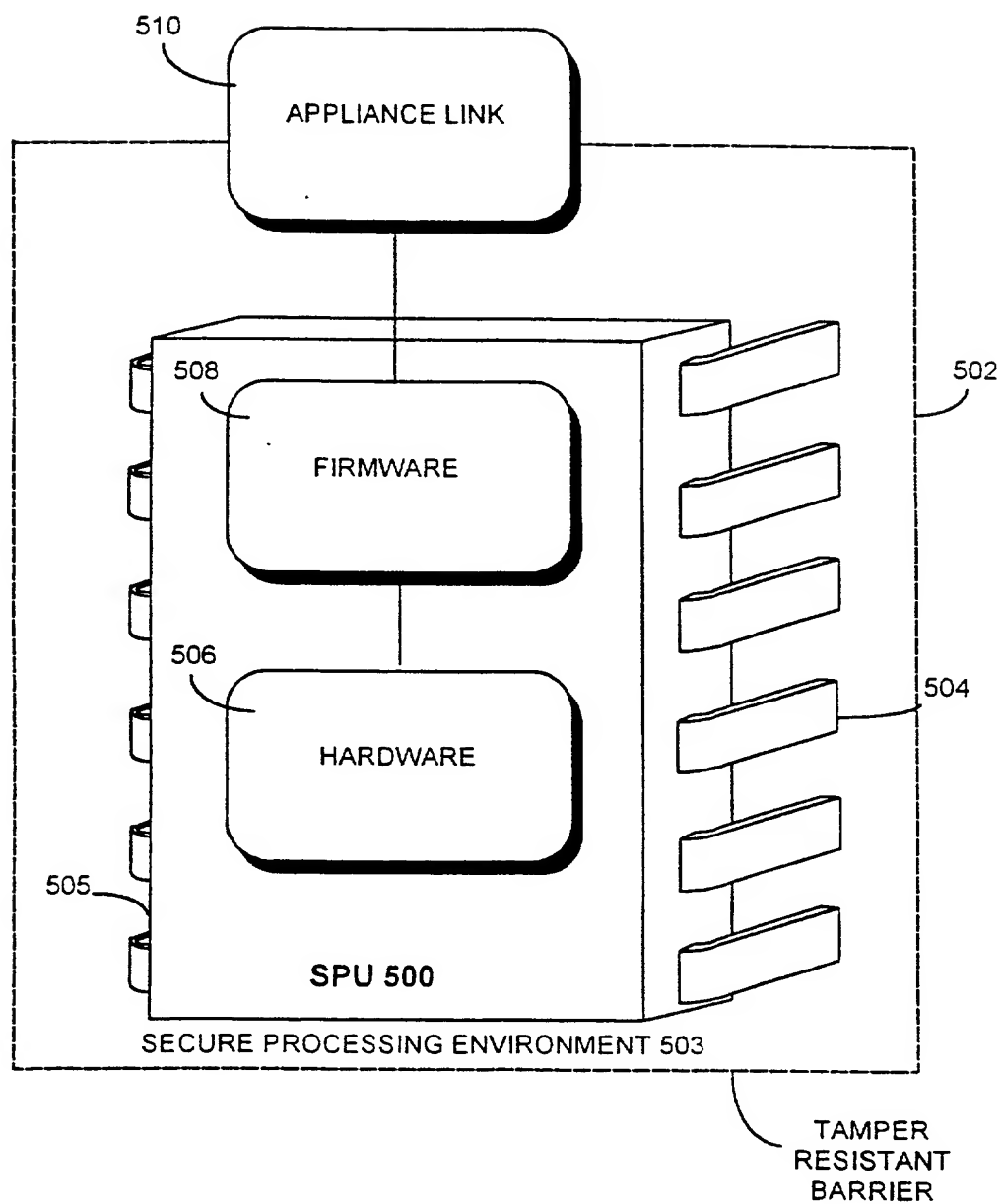


FIG. 6



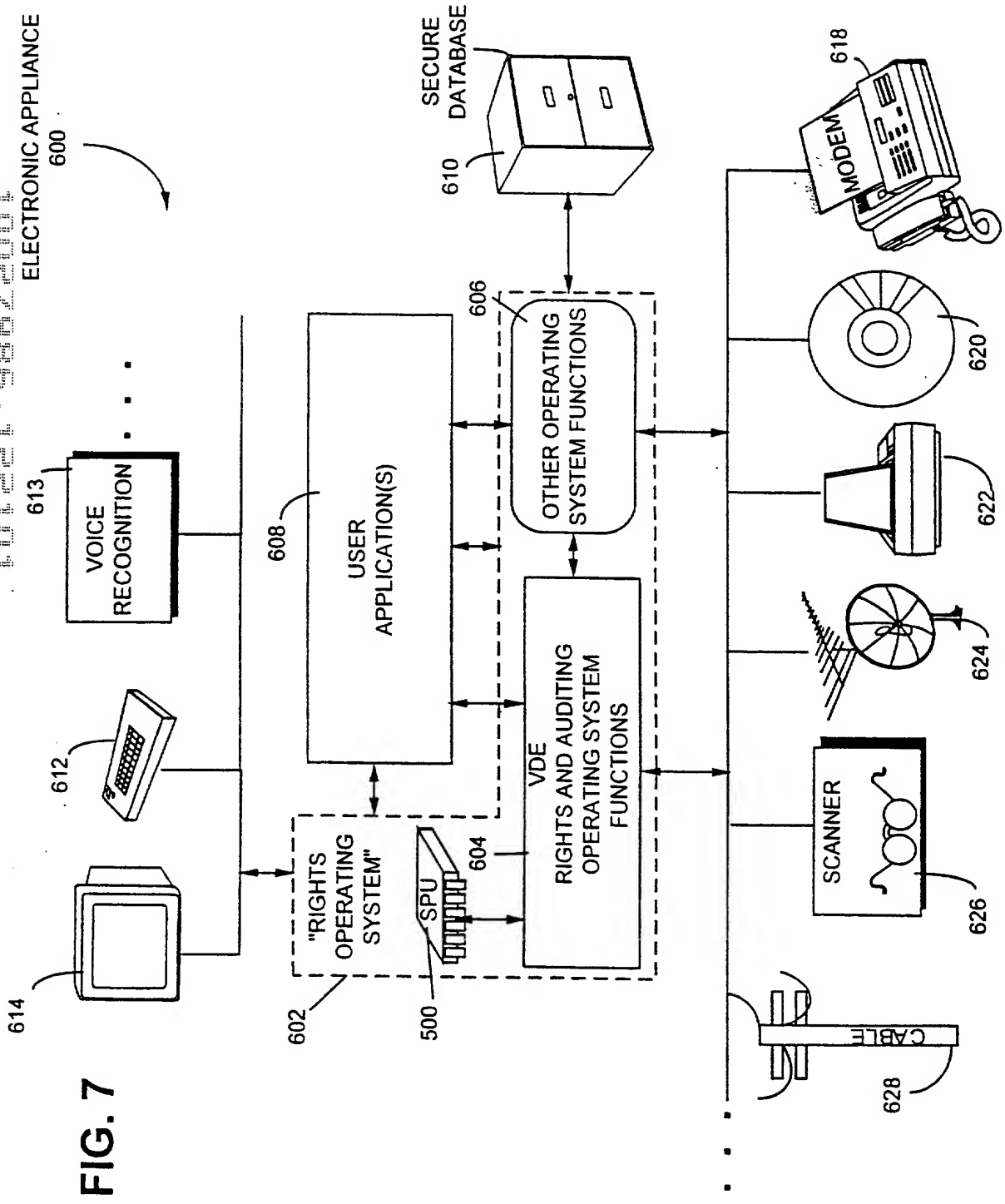
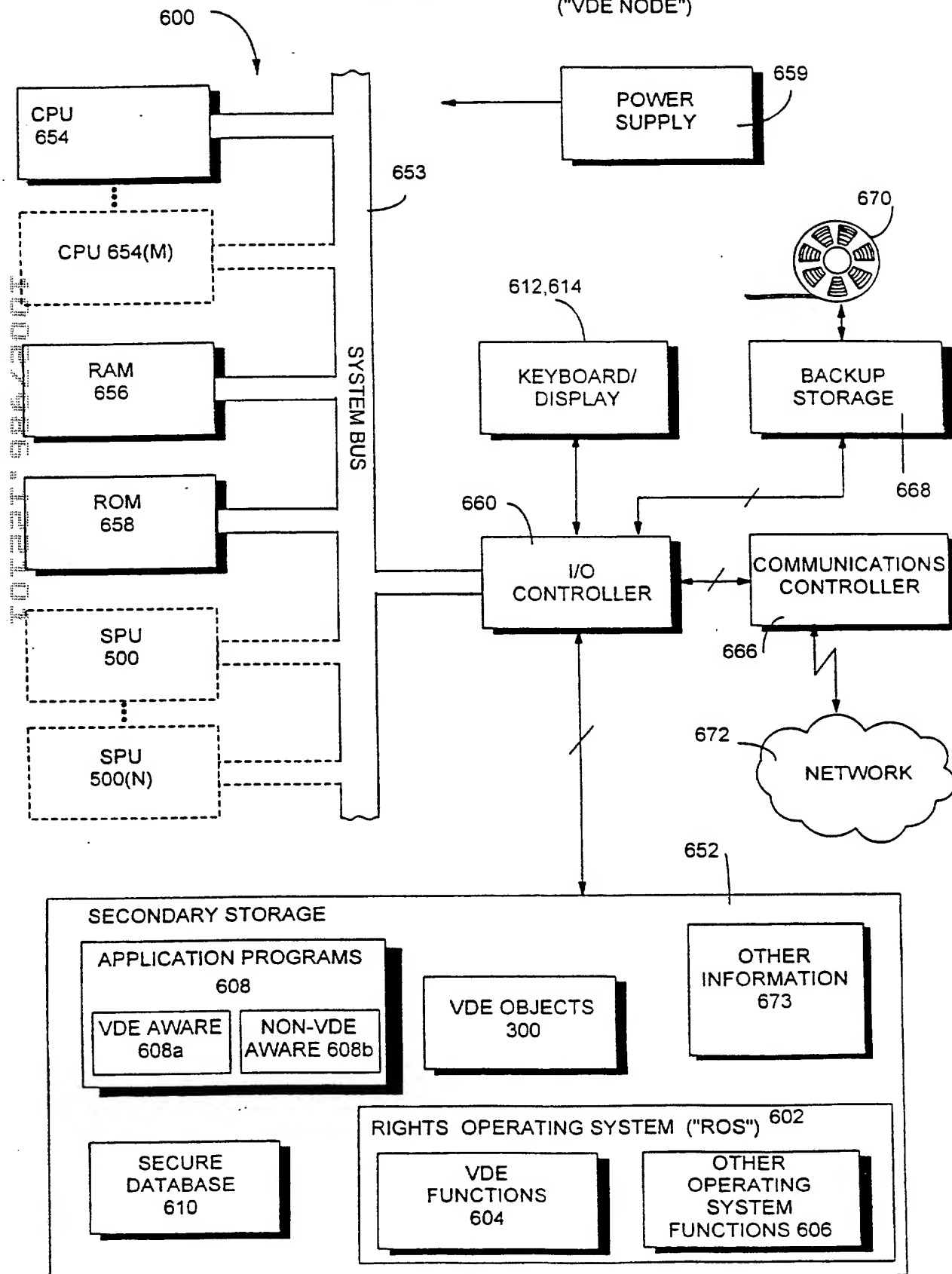


FIG. 8 ELECTRONIC APPLIANCE 600
("VDE NODE")



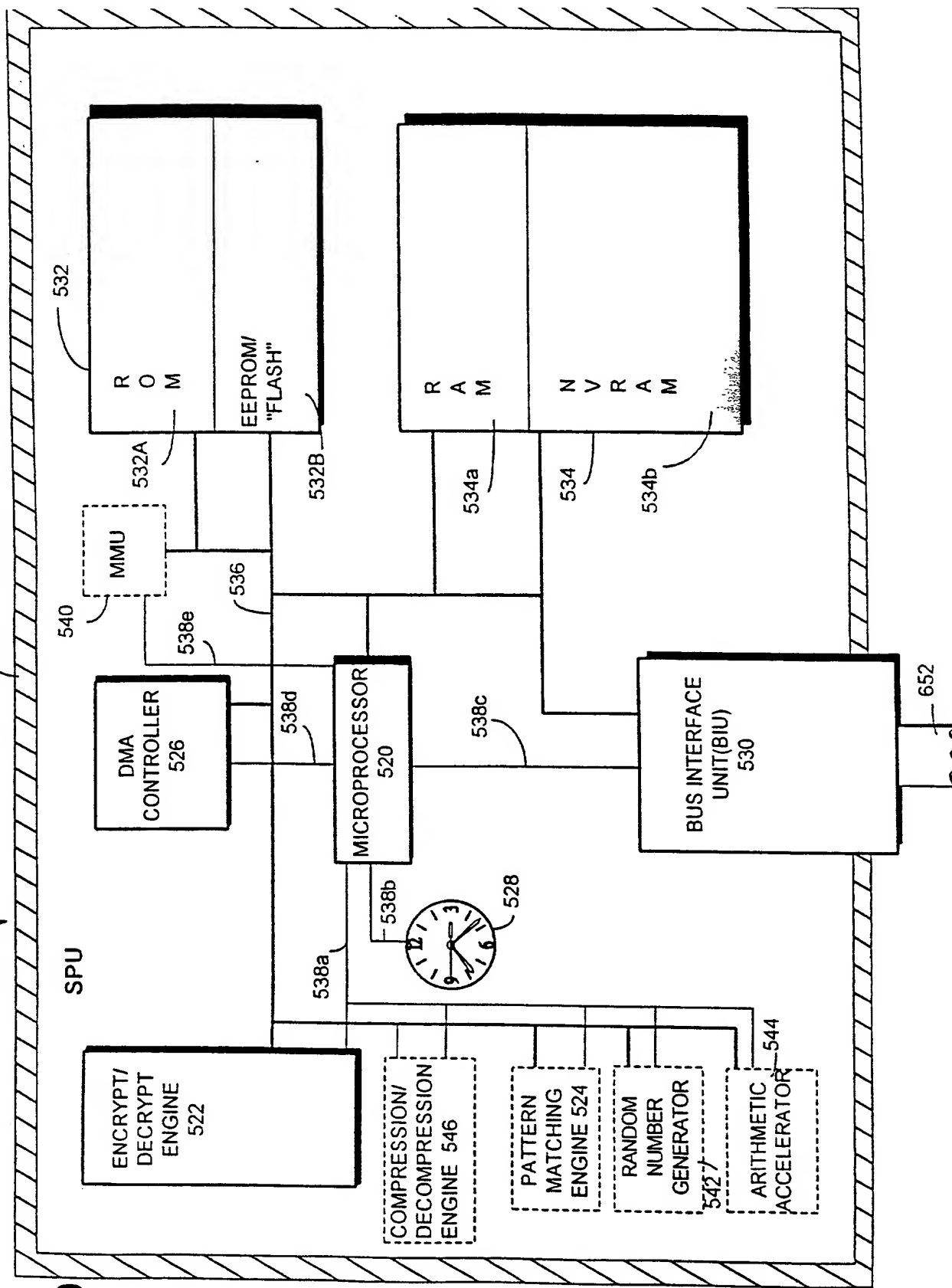


FIG. 9

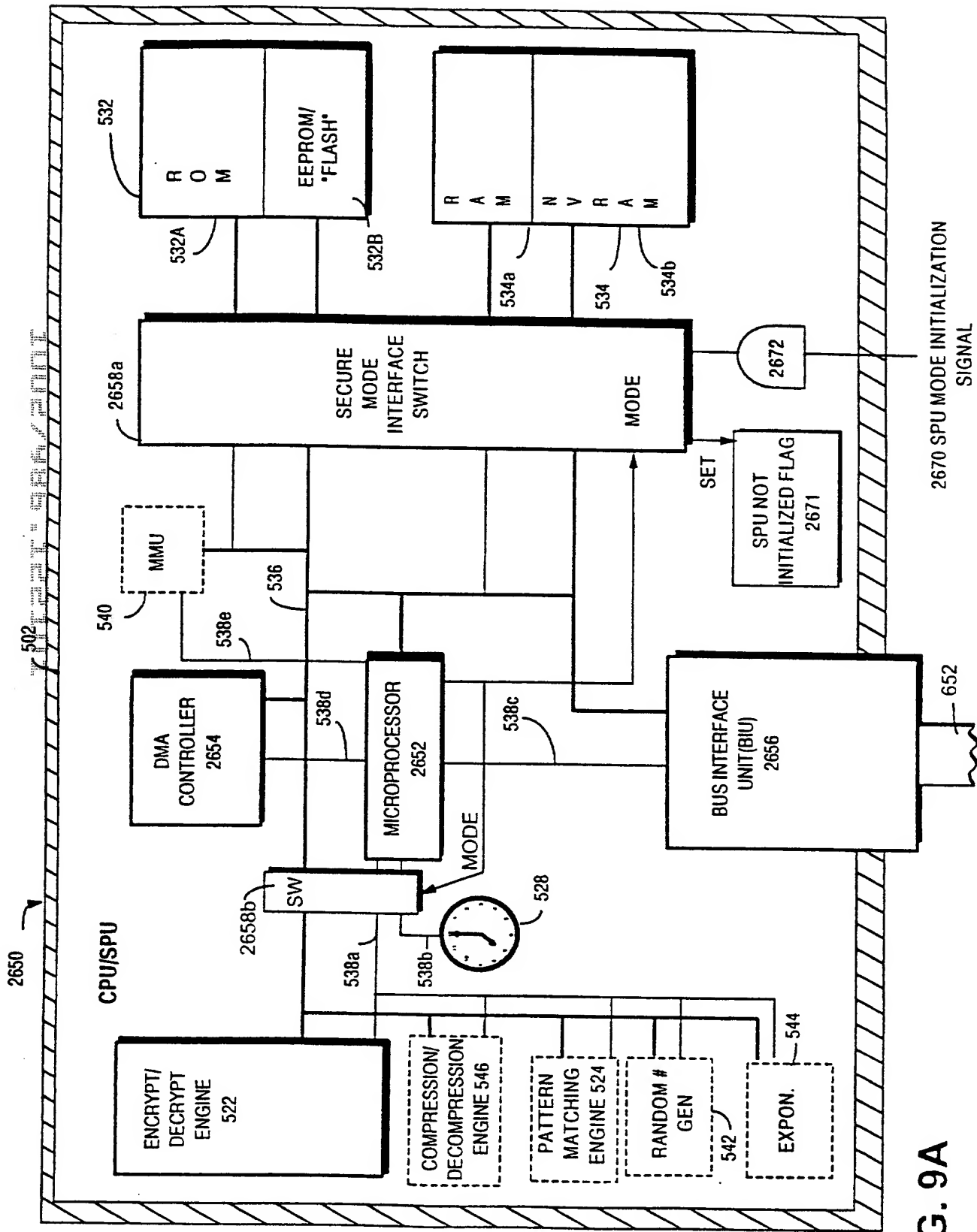
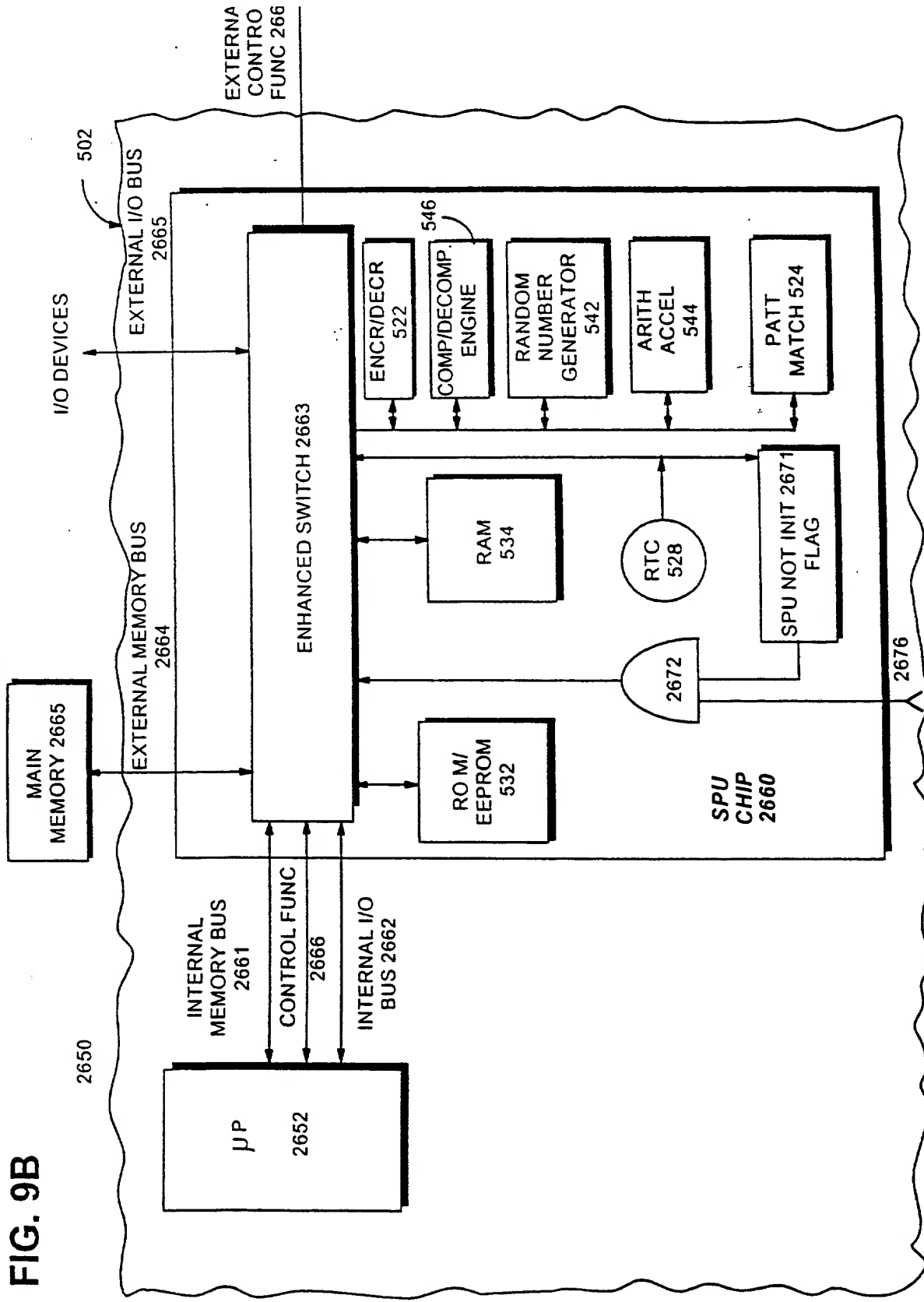
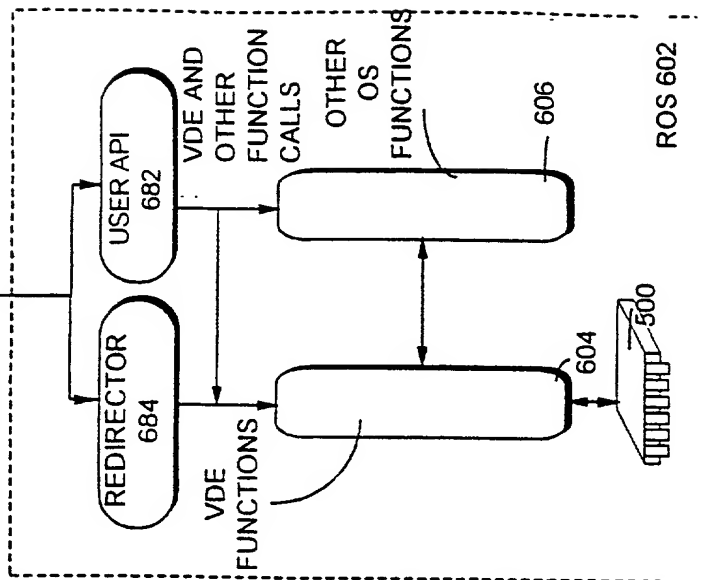
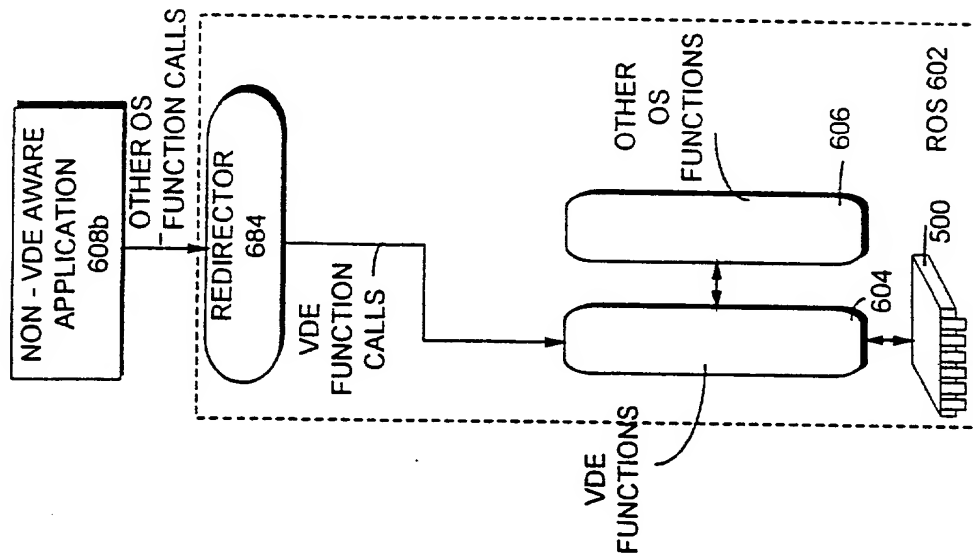
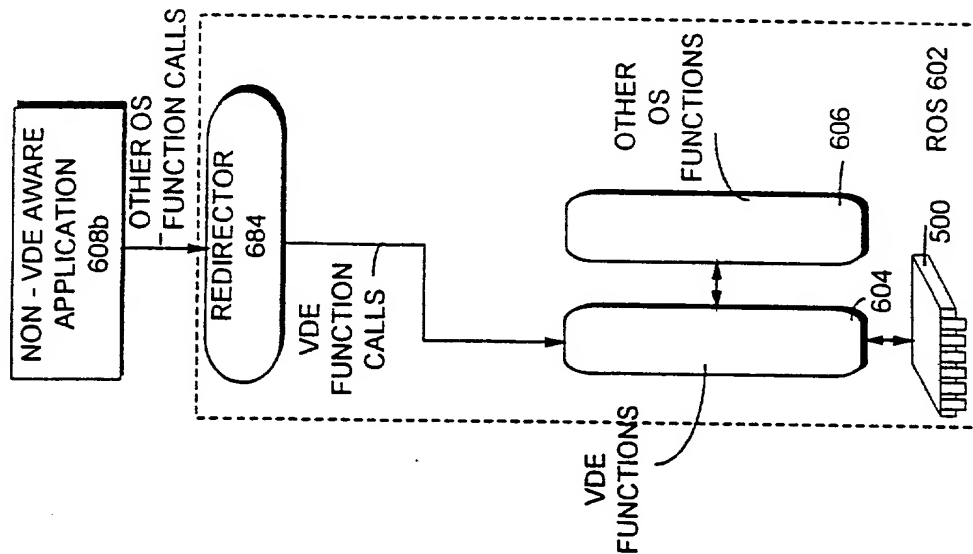
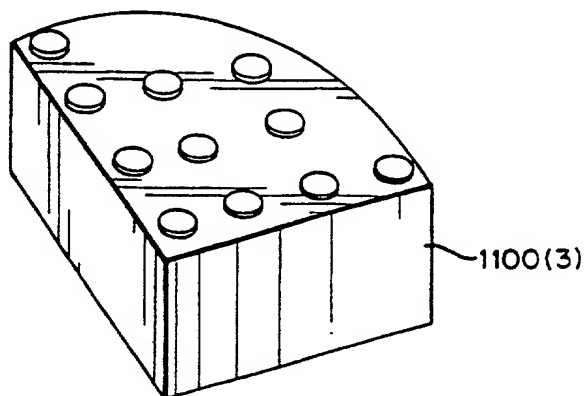
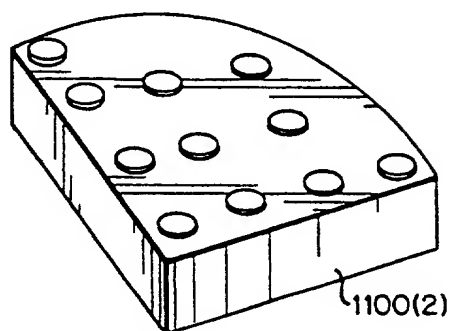
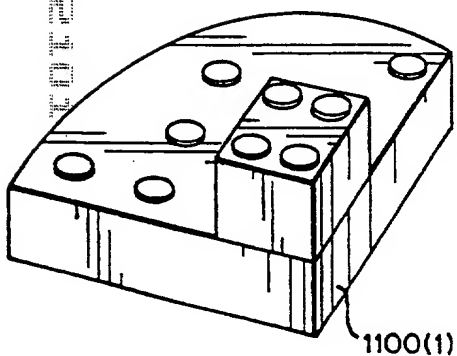
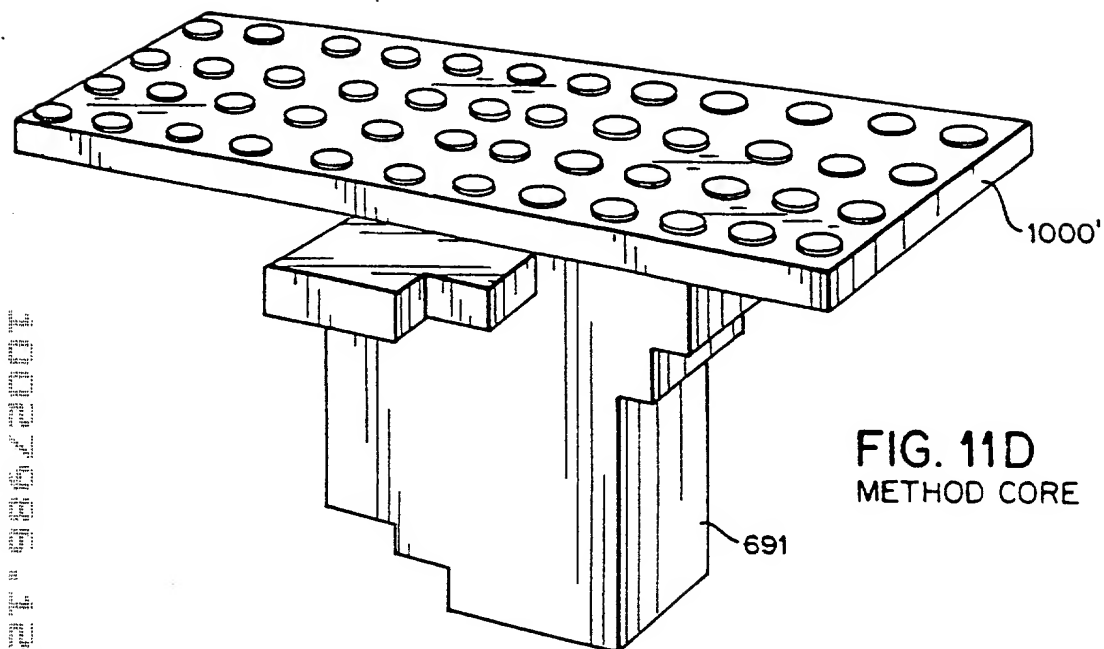


FIG. 9A







10027986-122101

10027986-122101

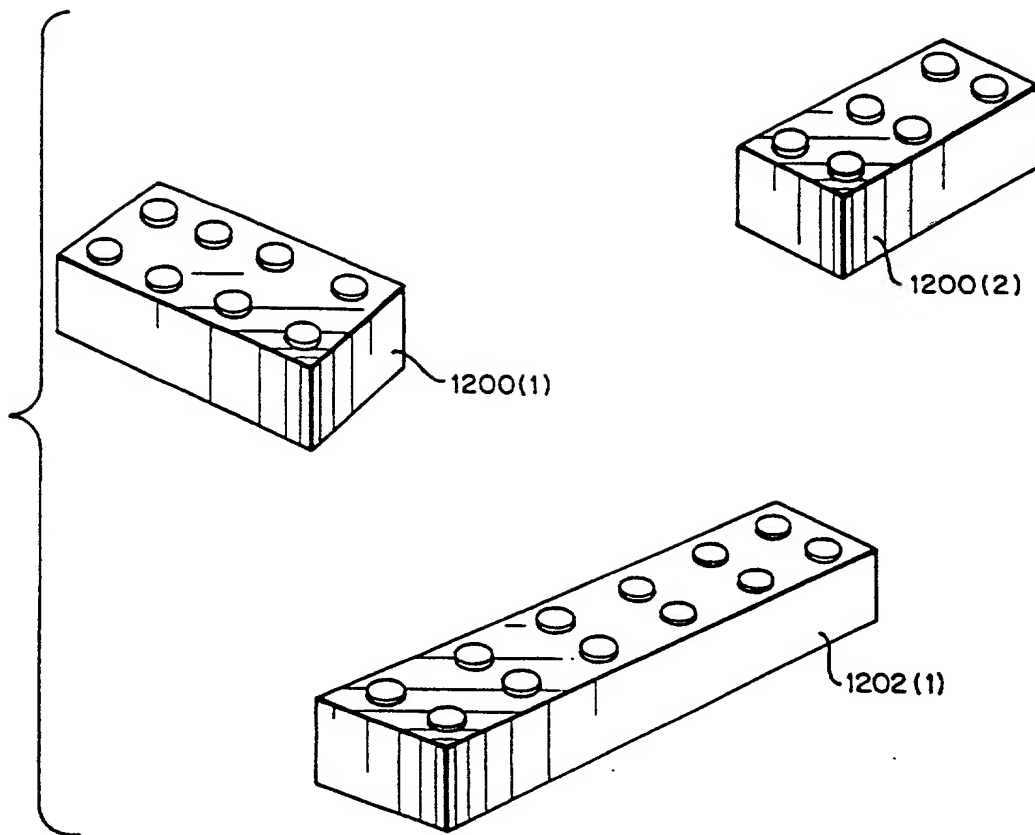


FIG. 11H
DATA STRUCTURES

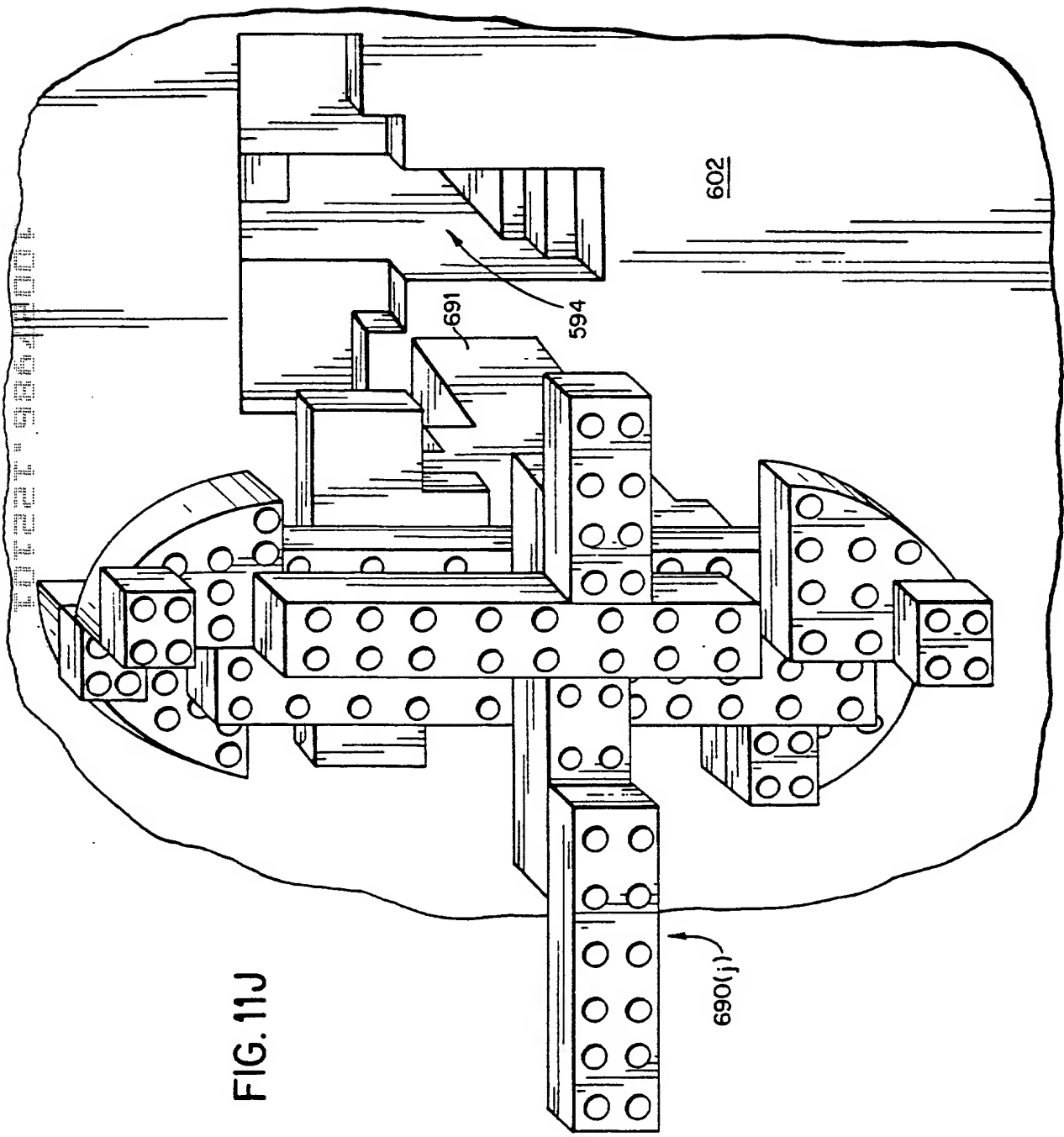


FIG. 11J

FILE SYSTEM 687

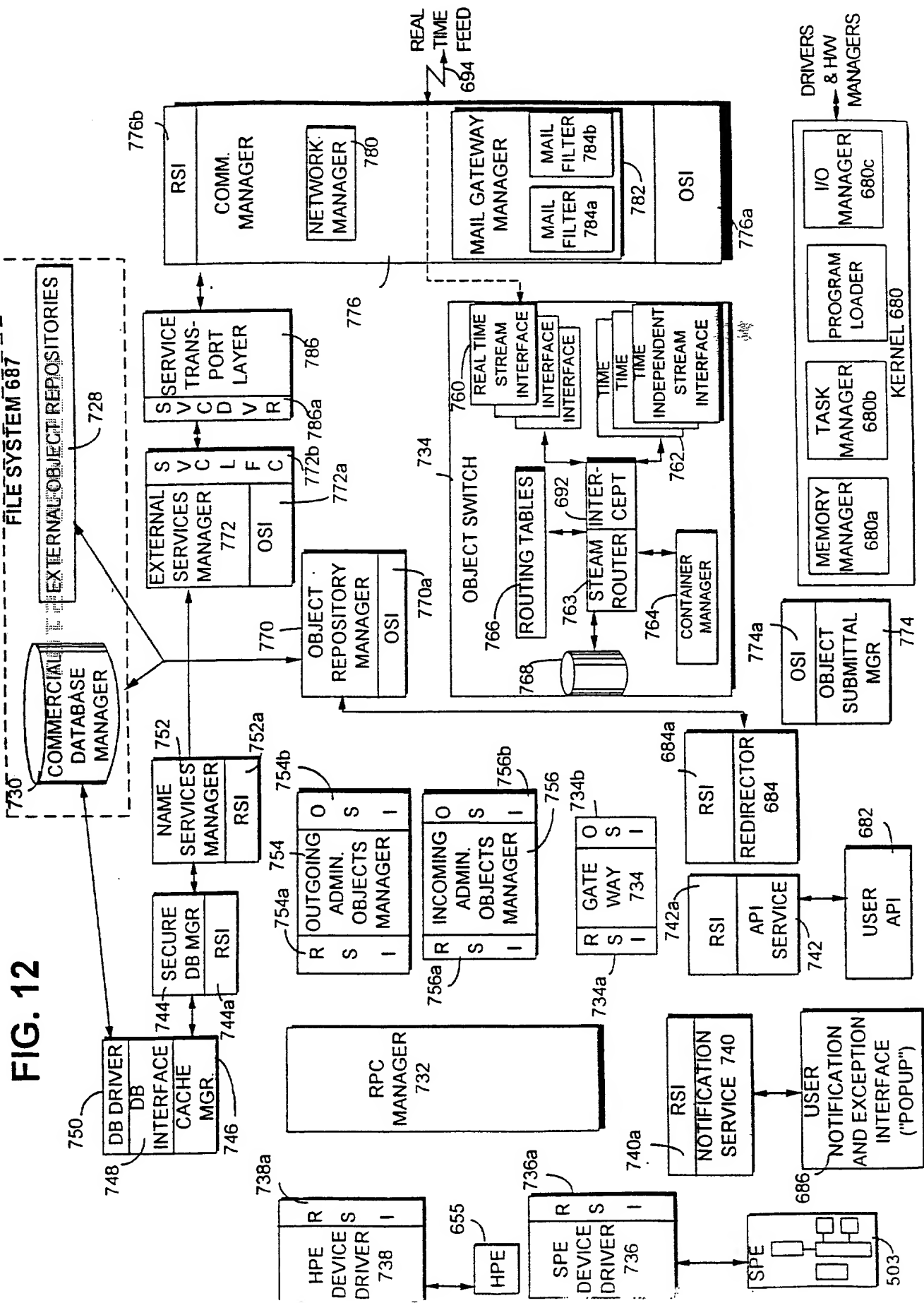
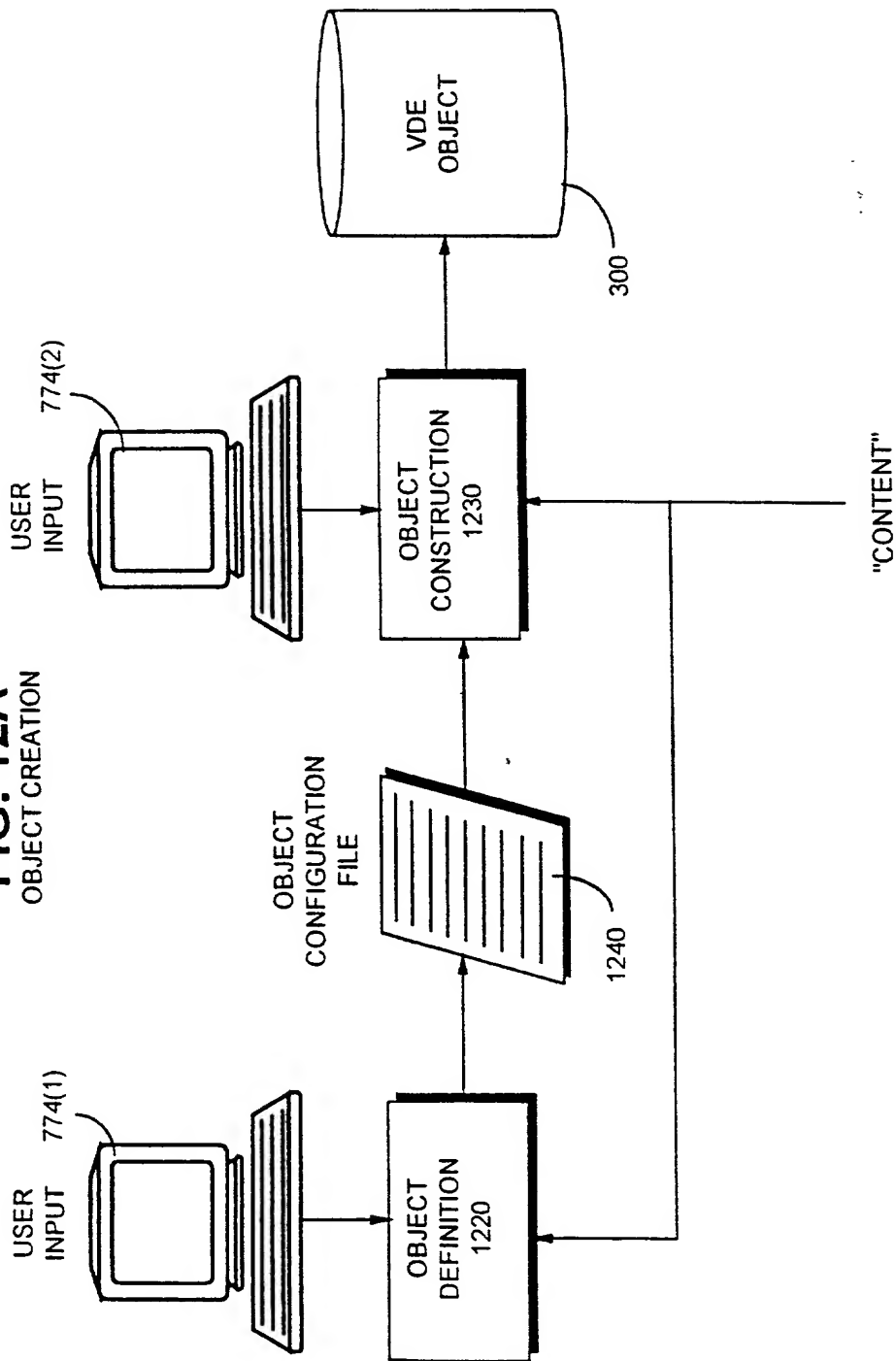
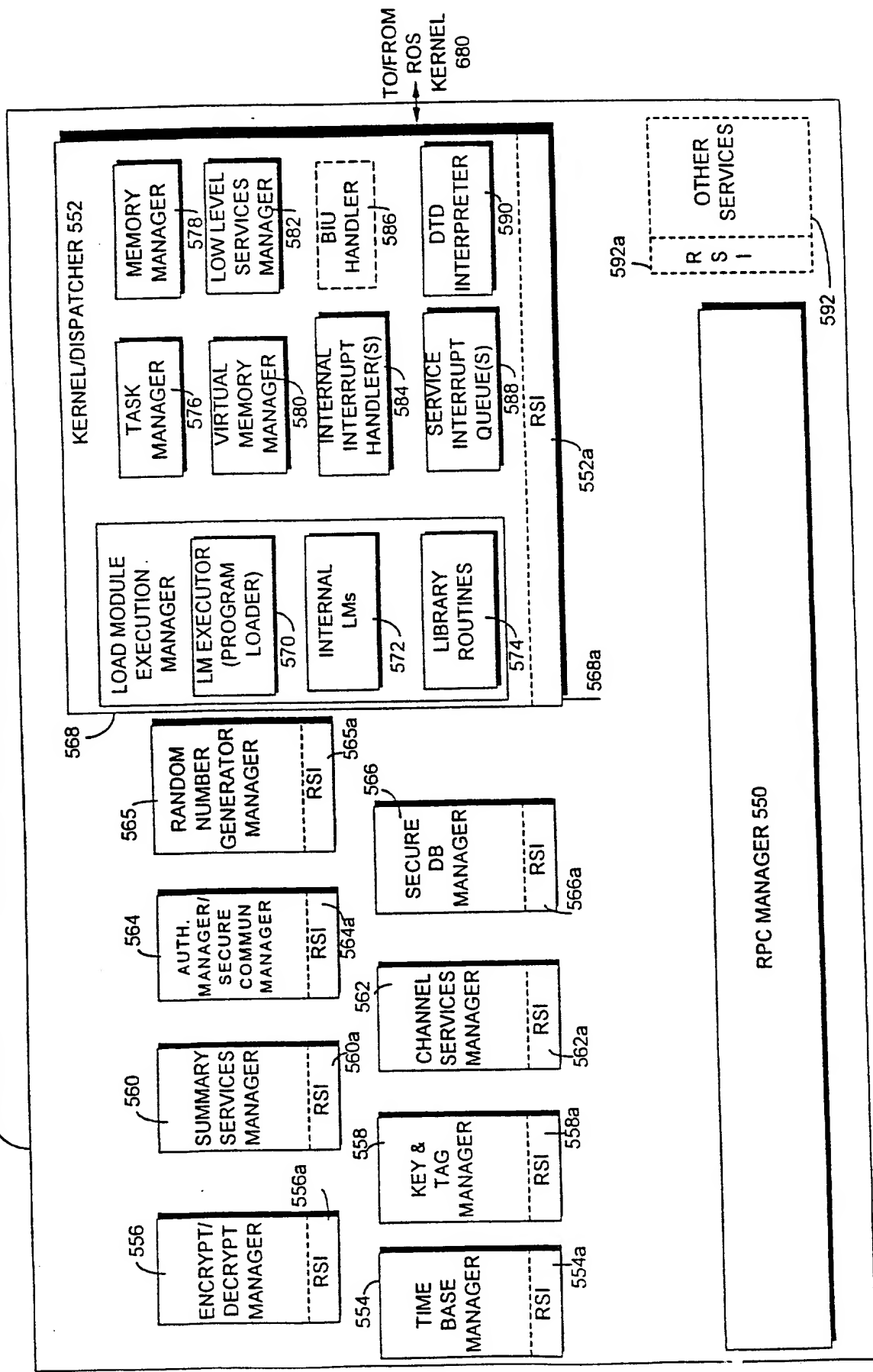


FIG. 12A
OBJECT CREATION





DEVICE FIRM WIRE LOW LEVEL SERVICES 582

INITIALIZATION

POST

DOWNLOAD
CHALLENGE/RESPONSE AND
AUTHENTICATION

RECOVERY

EEPROM/FLASH MEMORY
MANAGER**KERNEL/DISPATCHER 552**

INITIALIZATION

TASK MANAGER 576
(SLEEP/AWAKE/CONTEXT SWAP)INTERRUPT HANDLER 584
(TIMER/BIU/POWER FAIL/WATCHDOG
TIMER/ENCRYPTION COMPLETED)

BIU HANDLER 586

MEMORY MANAGER 578INITIALIZATION (SETTING MMU
TABLES)

ALLOCATE

DEALLOCATE

VIRTUAL MEMORY MANAGER 580

SWAP BLOCK PAGING

EXTERNAL MODULE PAGING

MEMORY COMPRESS

RPC AND TABLES 550

INITIALIZATION

MESSAGING CODE /SERVICES
MANAGER

SEND/RECEIVE

STATUS

RPC DISPATCH TABLE

RPC SERVICE TABLE

⋮

FIG. 14A**TIME BASE MANAGER 554****ENCRYPTION/DECRYPTION MANAGER 556**

PK

BULK

KEY AND TAG MANAGER 558

KEY STORAGE IN EEPROM

KEY LOCATOR

KEY GENERATOR

CONVOLUTION ALGORITHM

SUMMARY SERVICES MANAGER 560

EVENT SUMMARIES

BUDGET SUMMARIES

DISTRIBUTER SUMMARY SERVICES

CHANNEL SERVICES MANAGER 562

CHANNEL HEADERS

CHANNEL DETAILS

LOAD MODULE EXECUTION SERVICES 568**AUTHENTICATION MANAGER/SECURE
COMMUNICATION MANAGER 564****DATABASE MANAGER 566**

MANAGEMENT FILE SUPPORT

TRANSACTION AND
SEQUENCE NUMBER SUPPORT

SRN/ HASH

DTD INTERPRETER 590

LIBRARY ROUTINES 574

100 CALLS (STRING SEARCH ETC.)

MISC. ITEMS THAT ARE PROBABLY
LIBRARY ROUTINES

TAG CHECKING, MD5, CRC'S

INTERNAL LM'S 572 FOR BASIC
METHODS

METER LOAD MODULE(S)

BILLING LOAD MODULE(S)

BUDGET LOAD MODULE(S)

AUDIT LOAD MODULE(S)

READ OBJECT LOAD MODULE(S)

WRITE OBJECT LOAD MODULE(S)

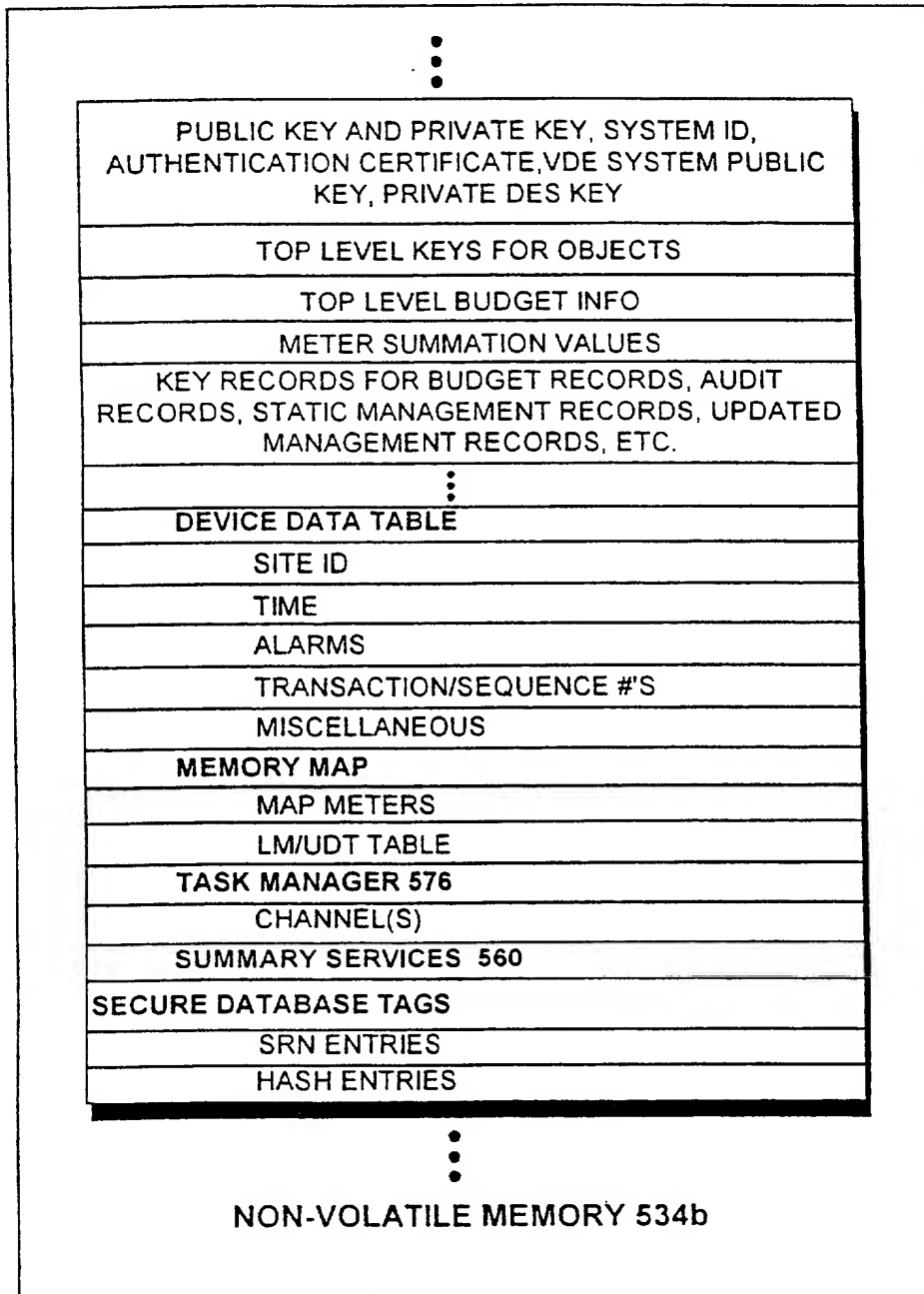
OPEN OBJECT LOAD MODULE(S)

CLOSE OBJECT LOAD MODULE(S)

⋮

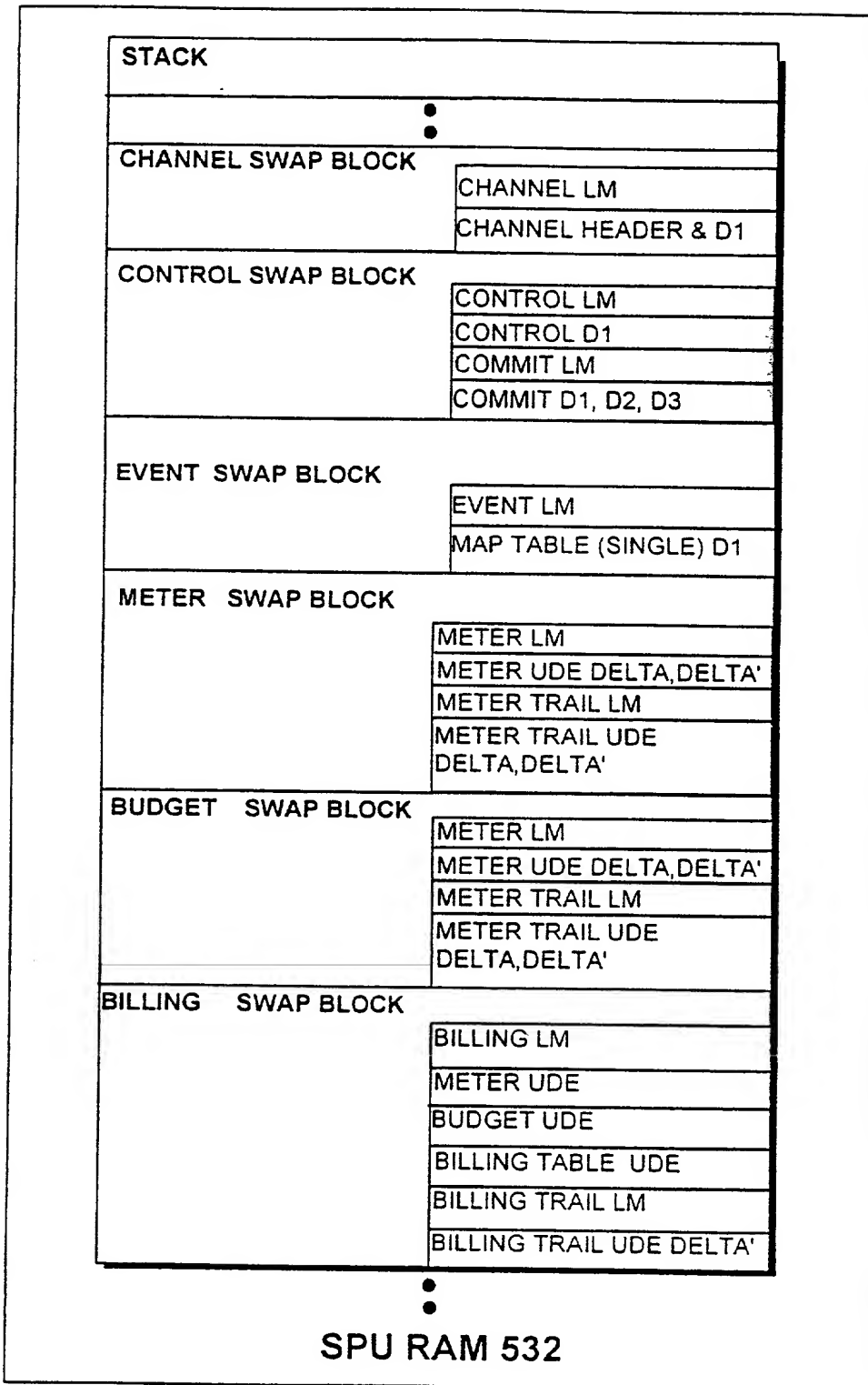
SPU ROM/EEPROM/FLASH 532

FIG. 14B



10027986 122101

FIG. 14C



1007986 " 122101

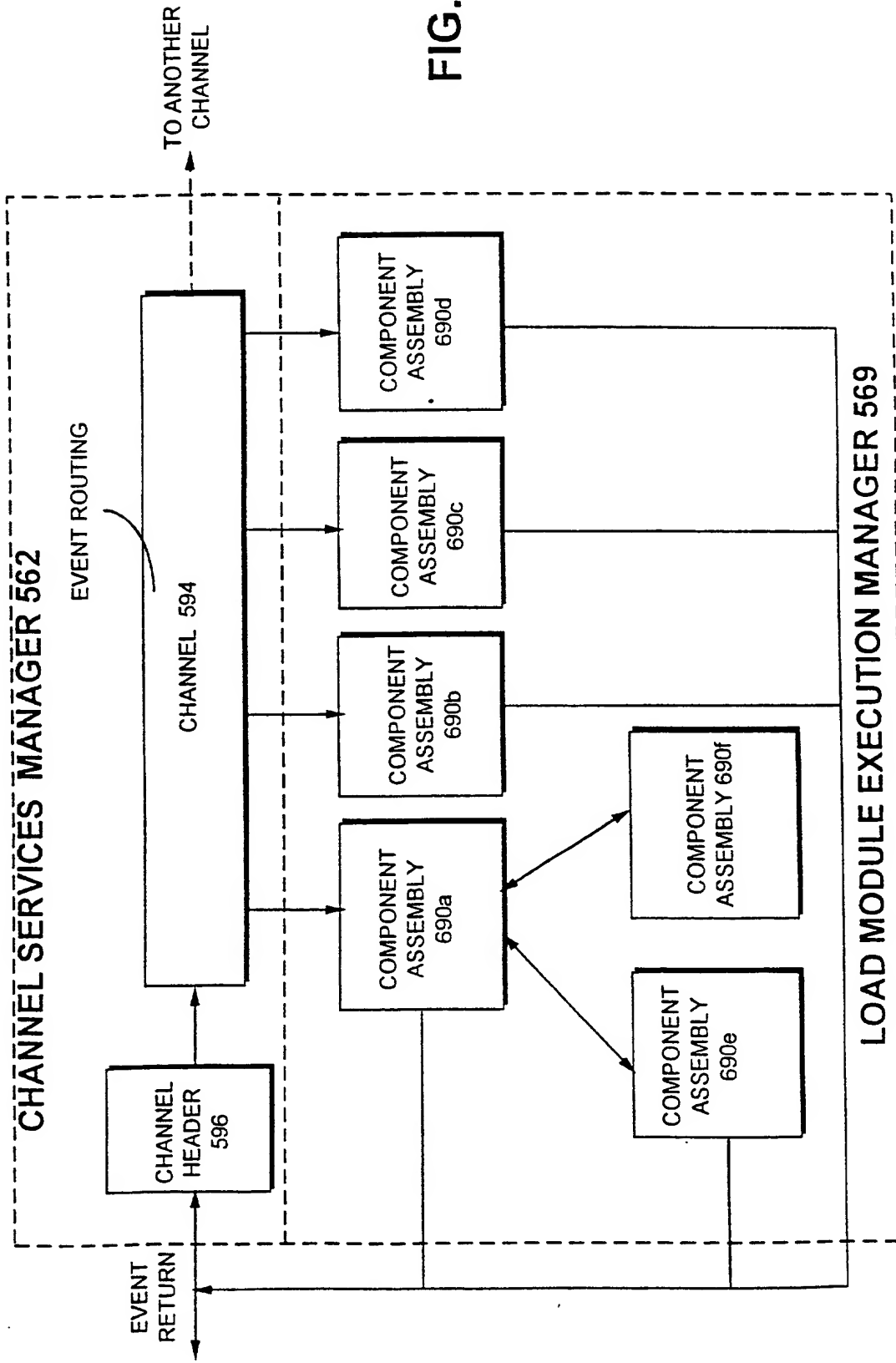


FIG. 15A

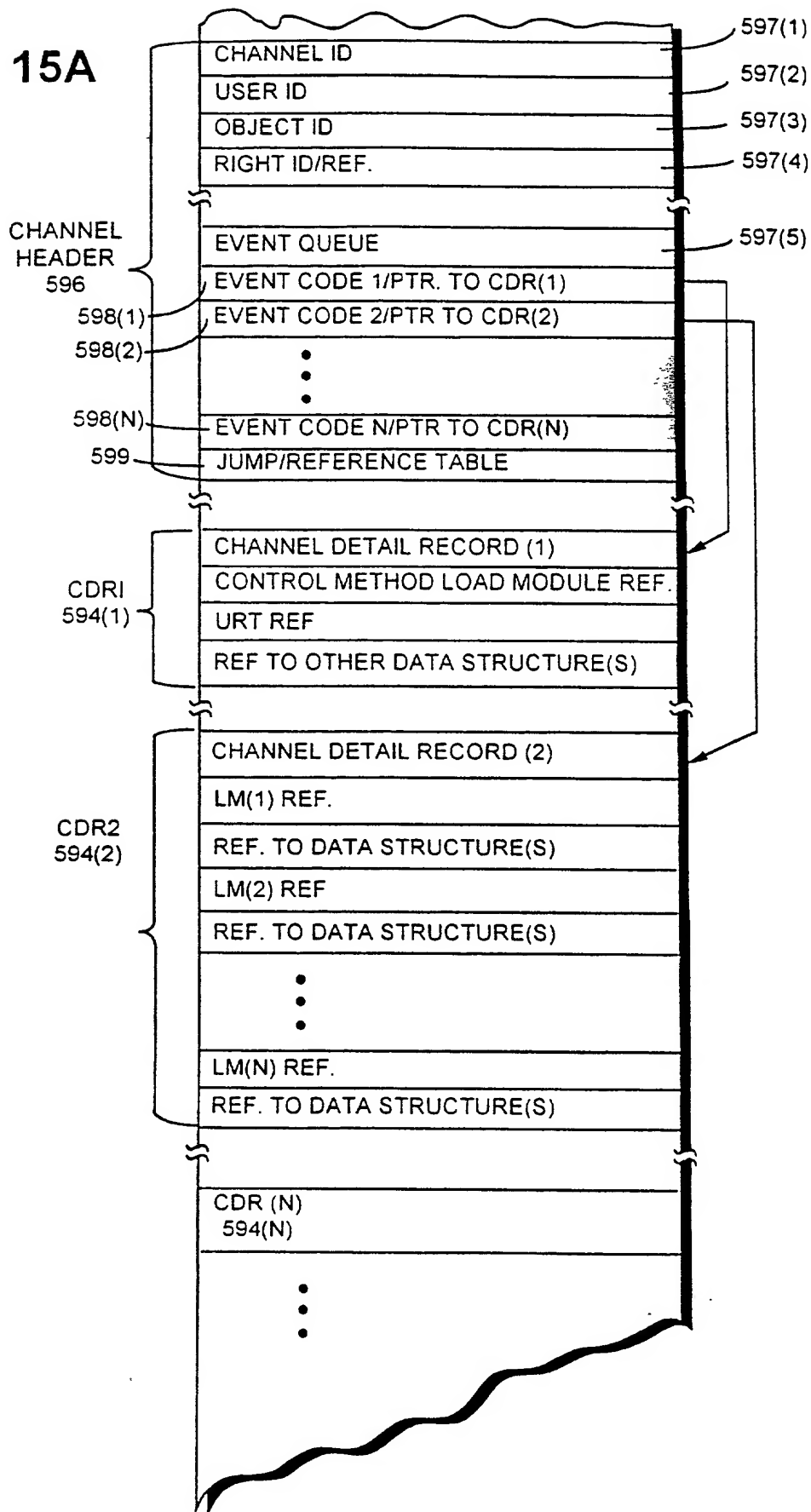
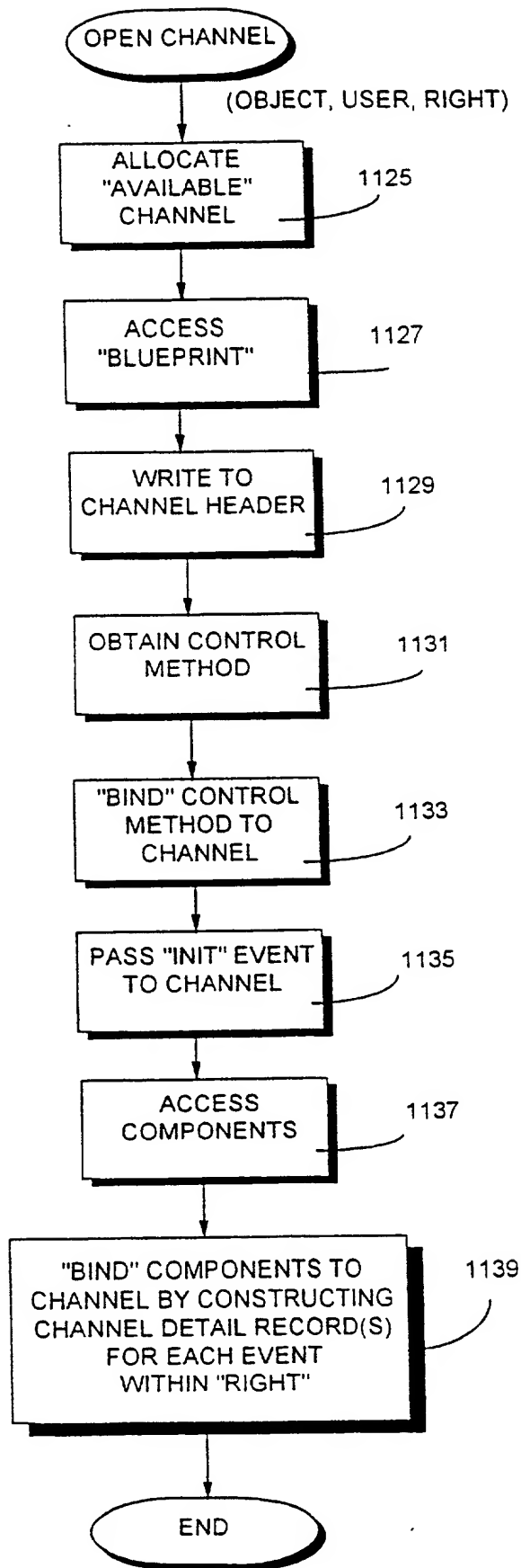
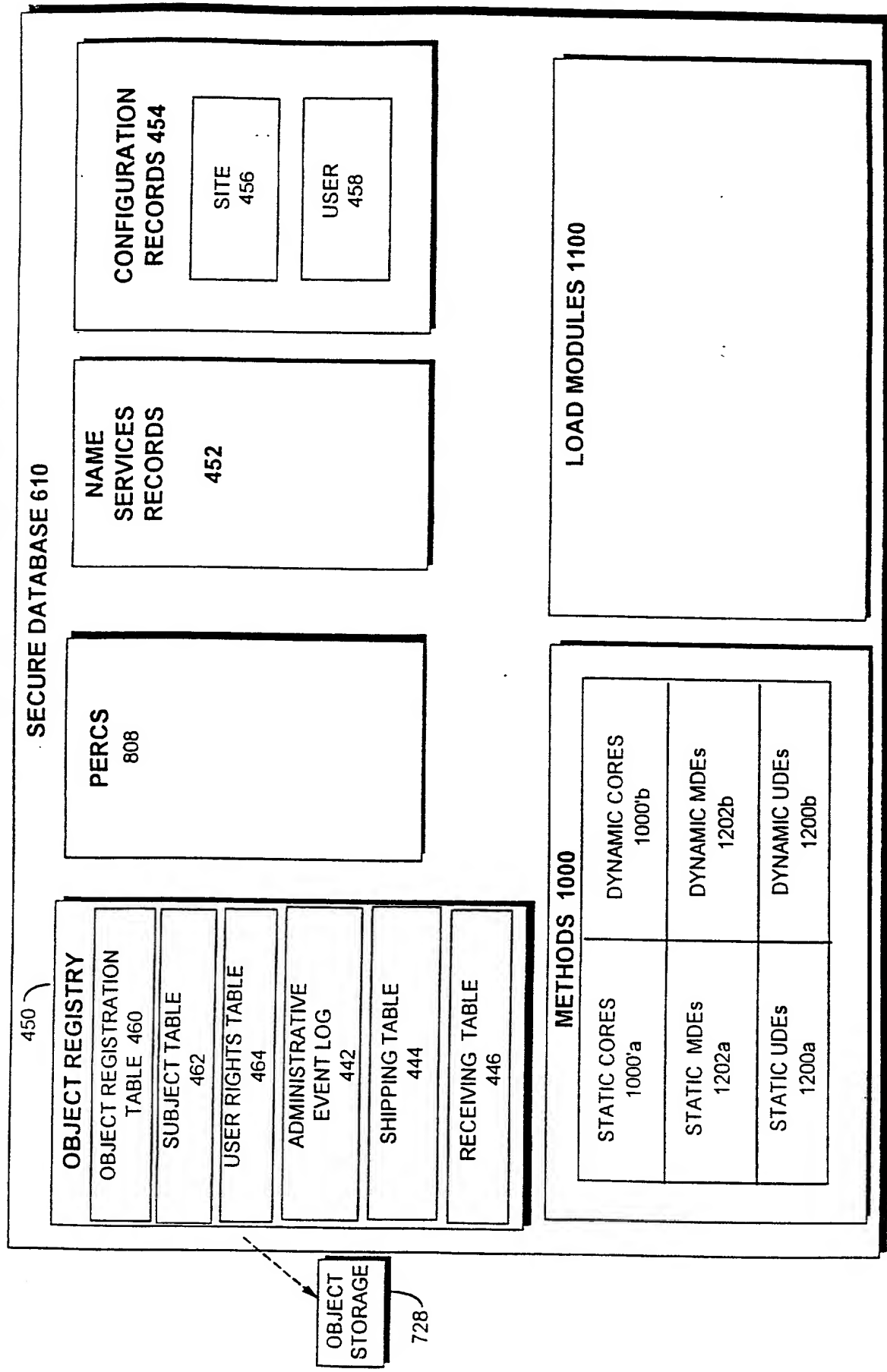


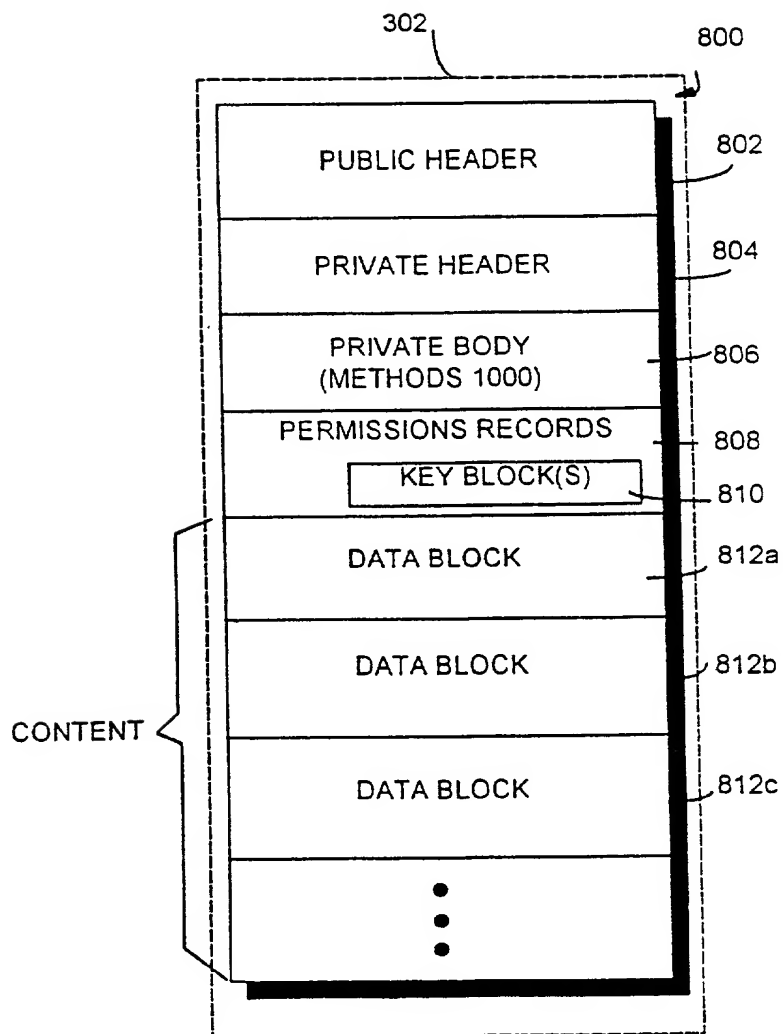
FIG. 15B



10027986 122101

FIG. 16
TOTAL 986/2001

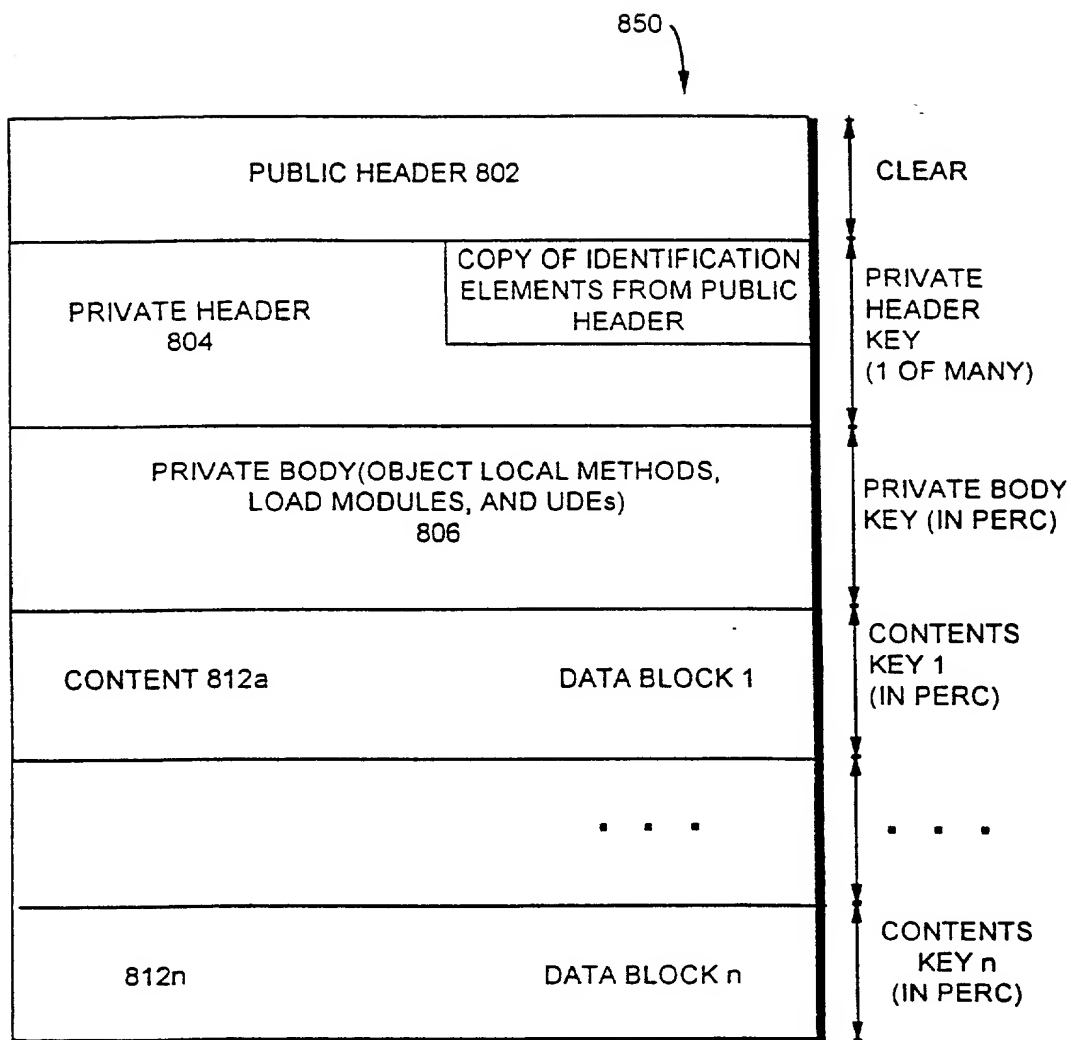




LOGICAL OBJECT

FIG. 17

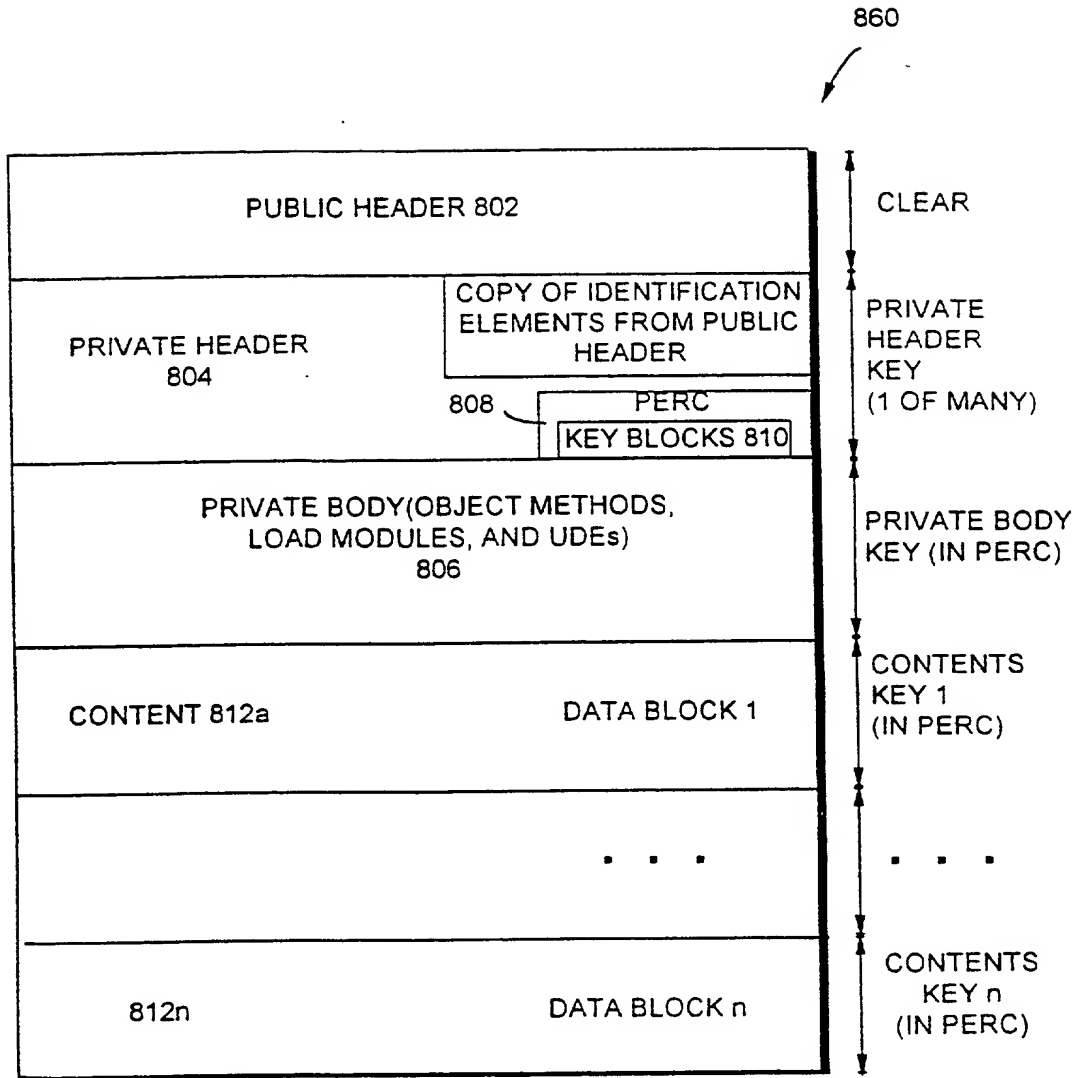
10027986-122101



STATIONARY OBJECT

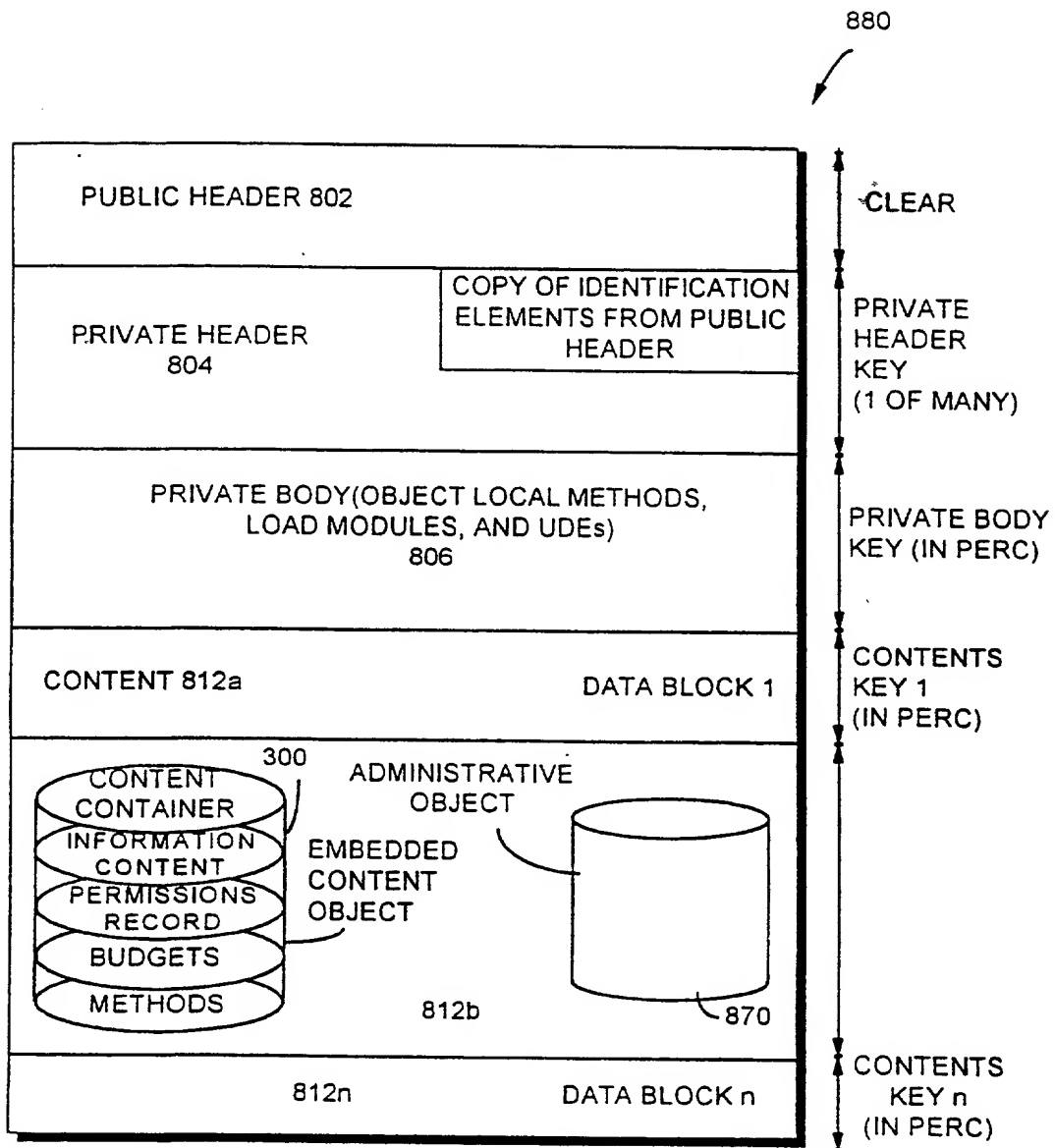
FIG. 18

10027986 1210



TRAVELING OBJECT

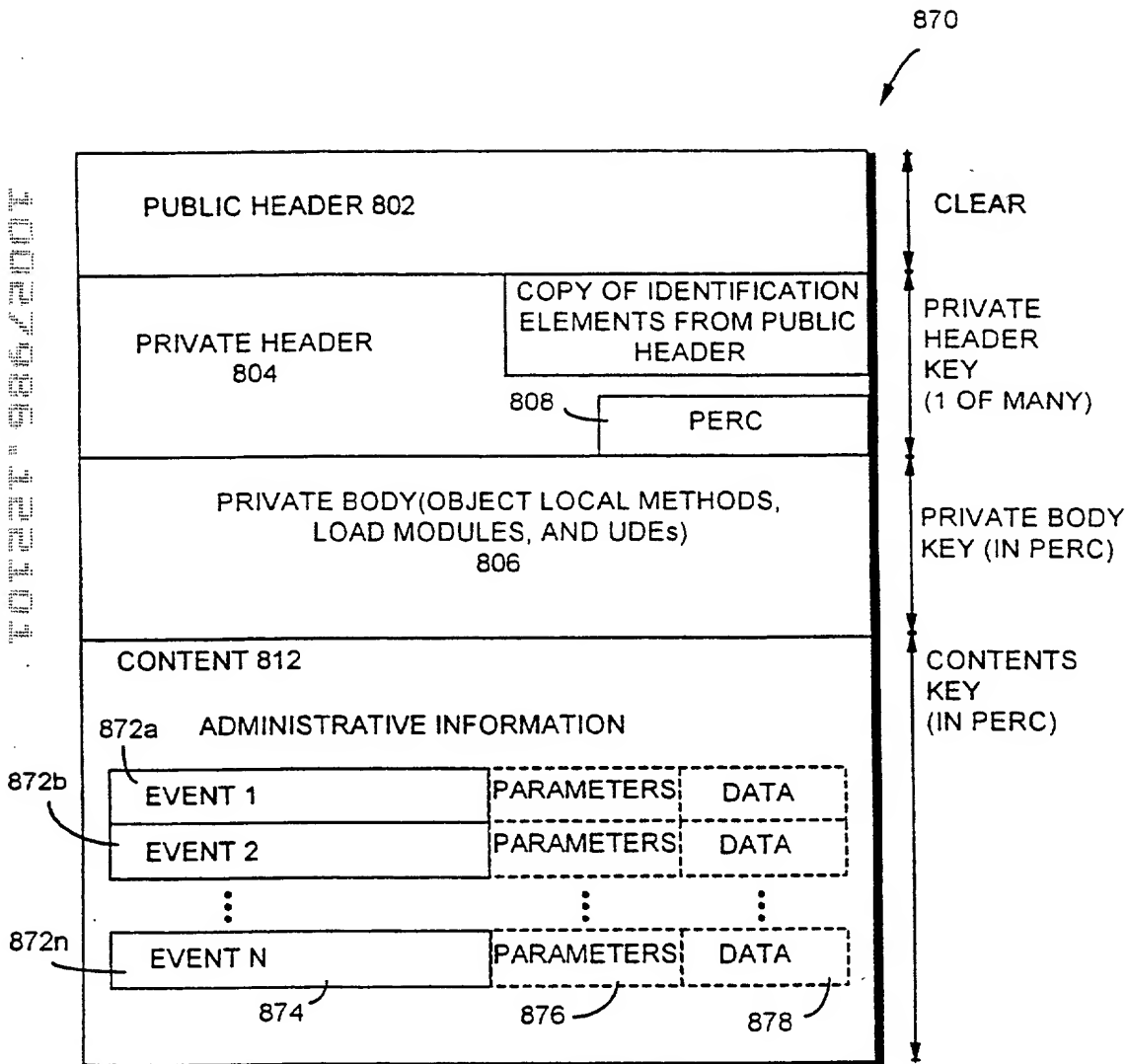
FIG. 19



CONTENT OBJECT

FIG. 20

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ADMINISTRATIVE OBJECT

FIG. 21

FIG. 22

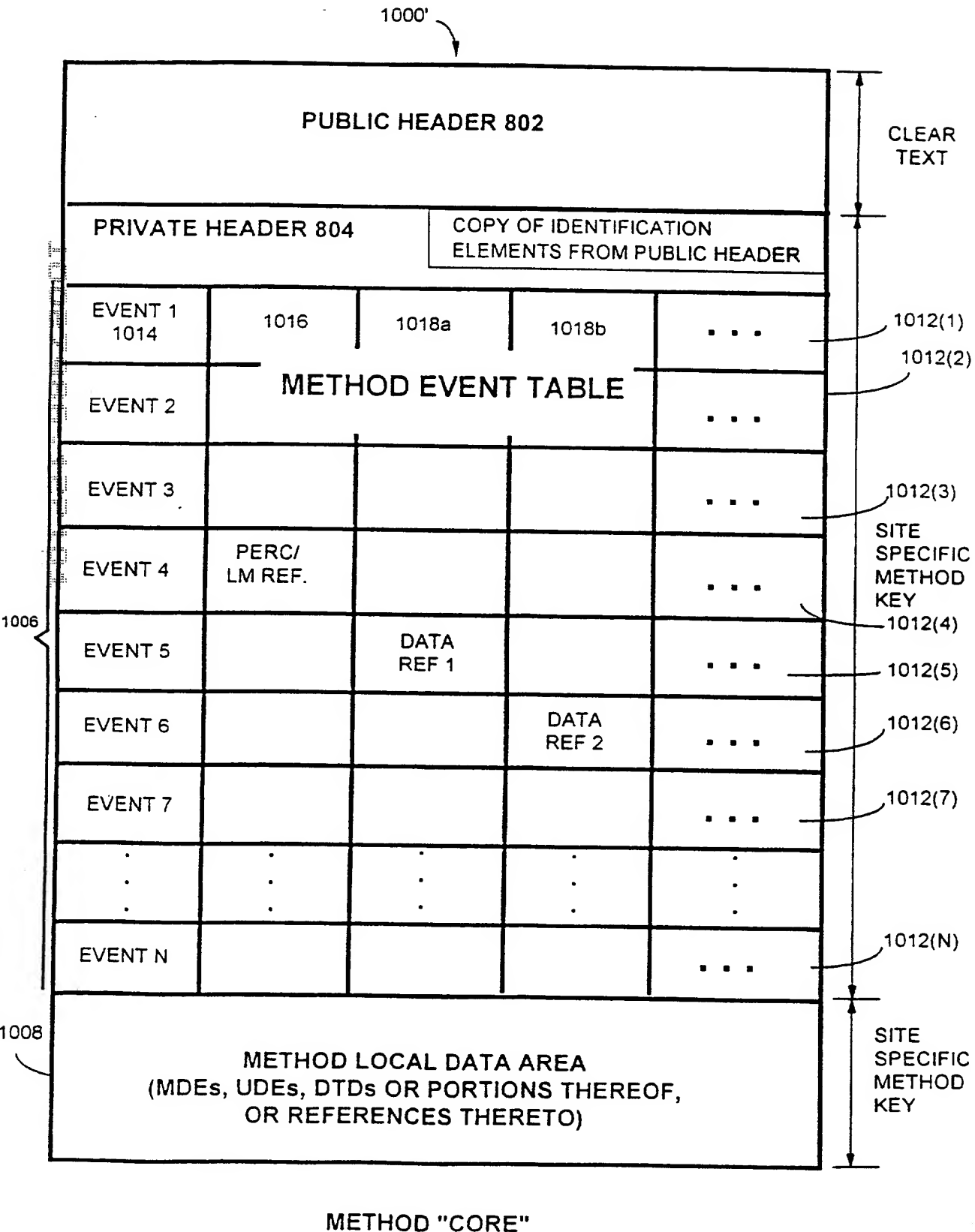
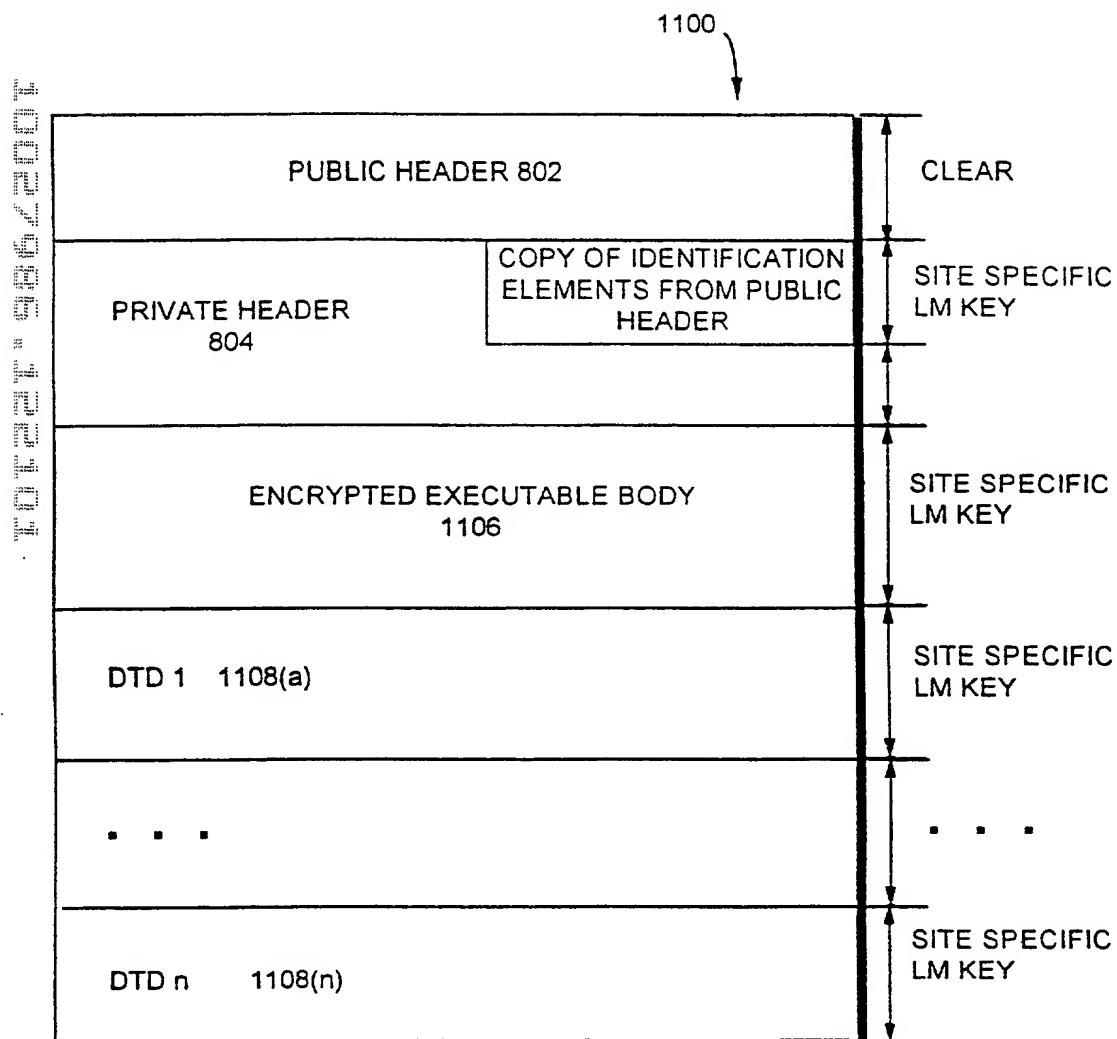
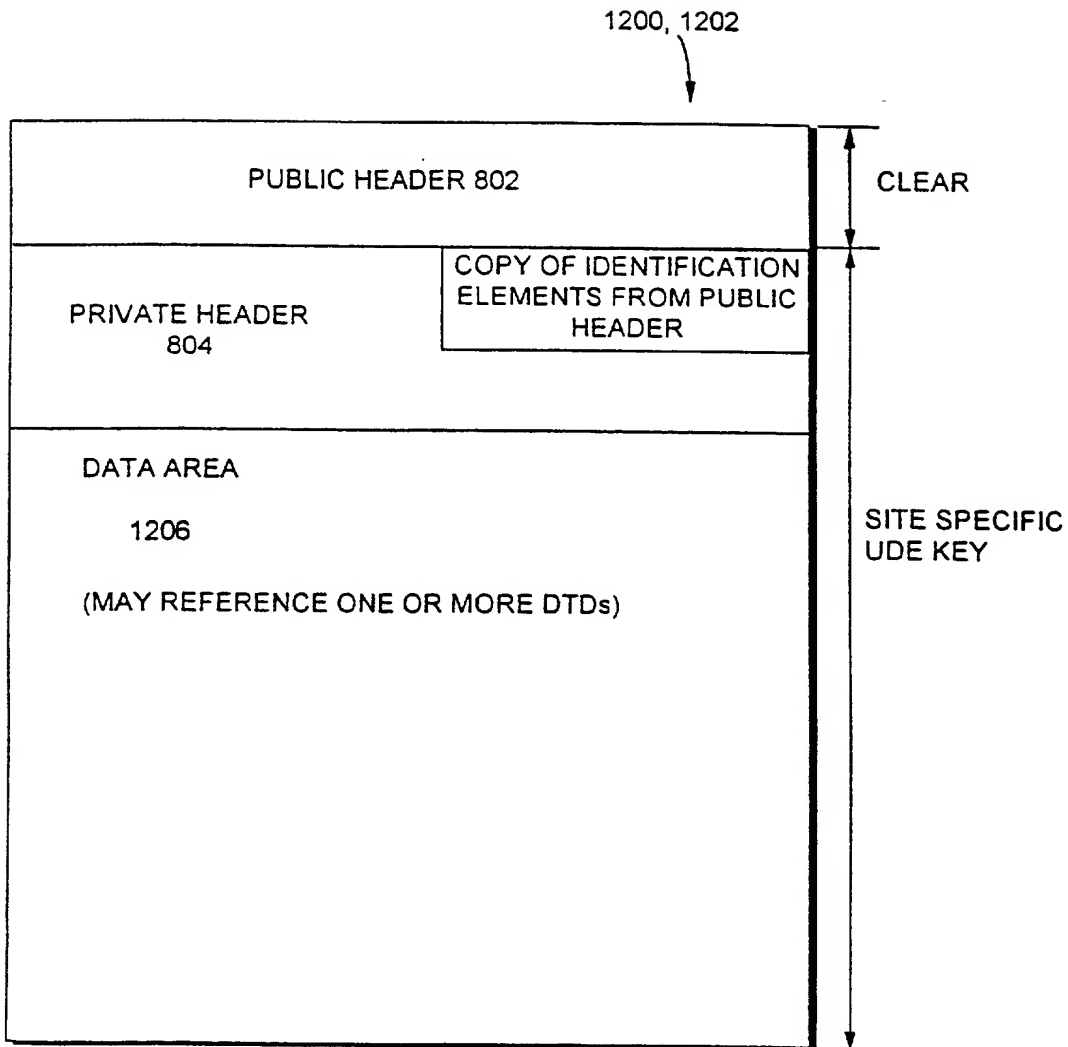


FIG. 23



LOAD MODULE

FIG. 24



UDE (MDE)

FIG. 25A

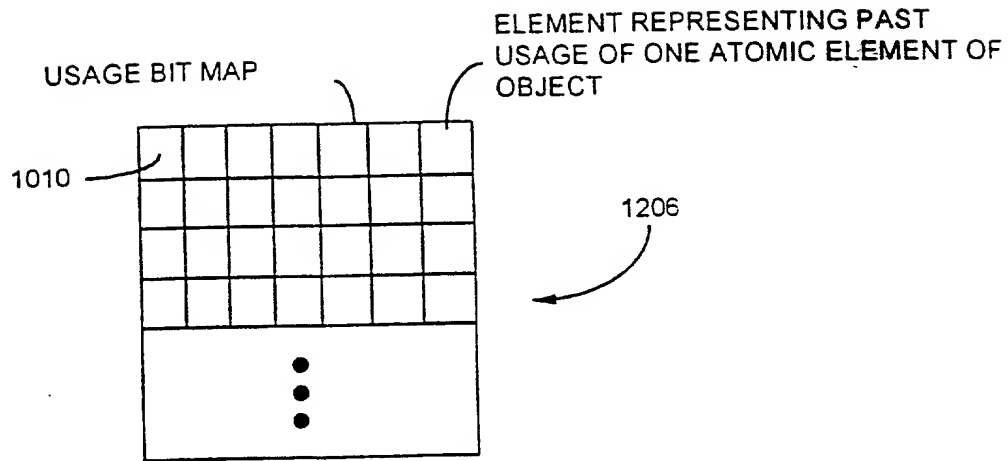


FIG. 25B

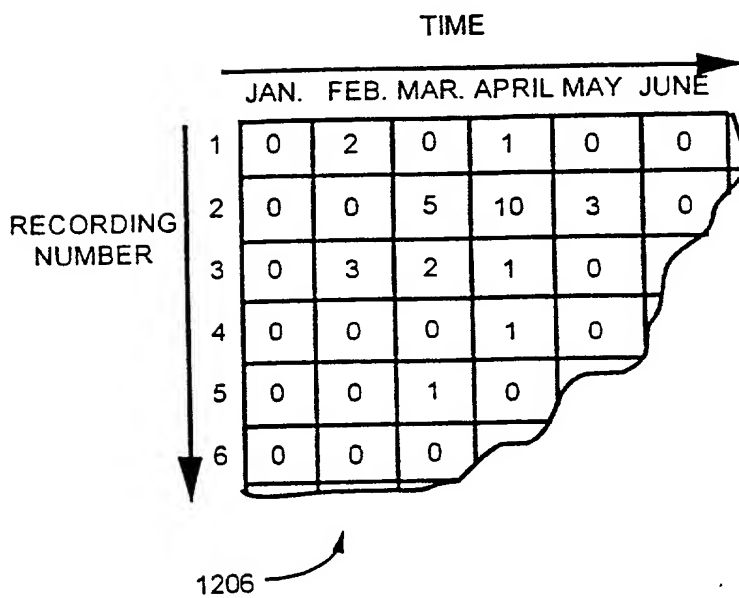


FIG. 25C

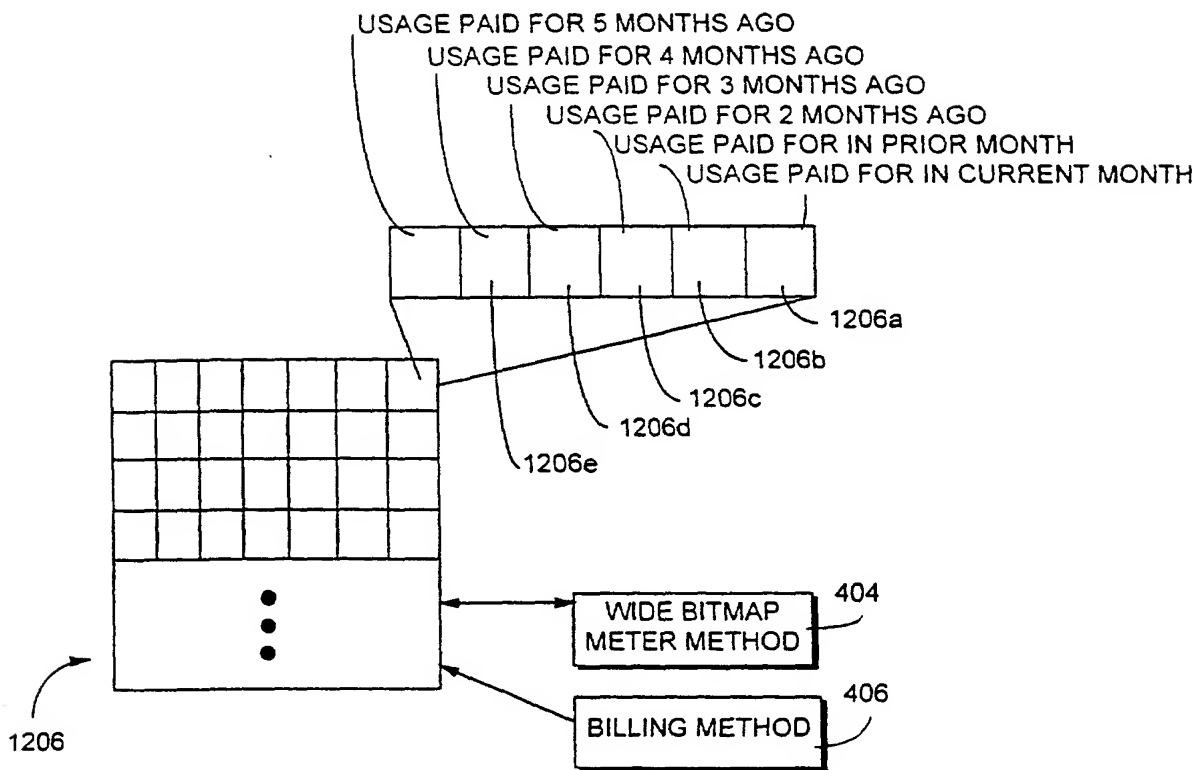


FIG. 26

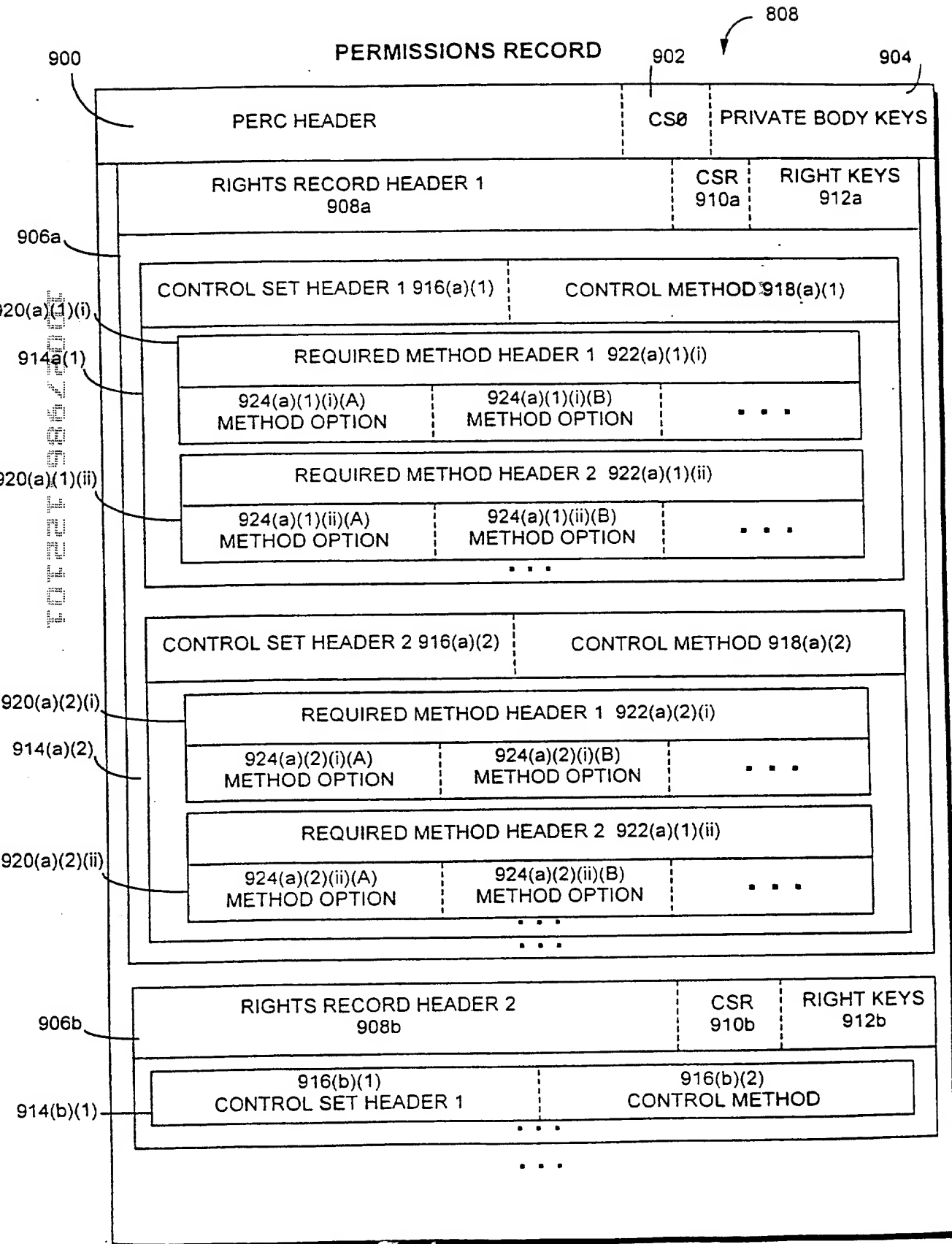


FIG. 26A

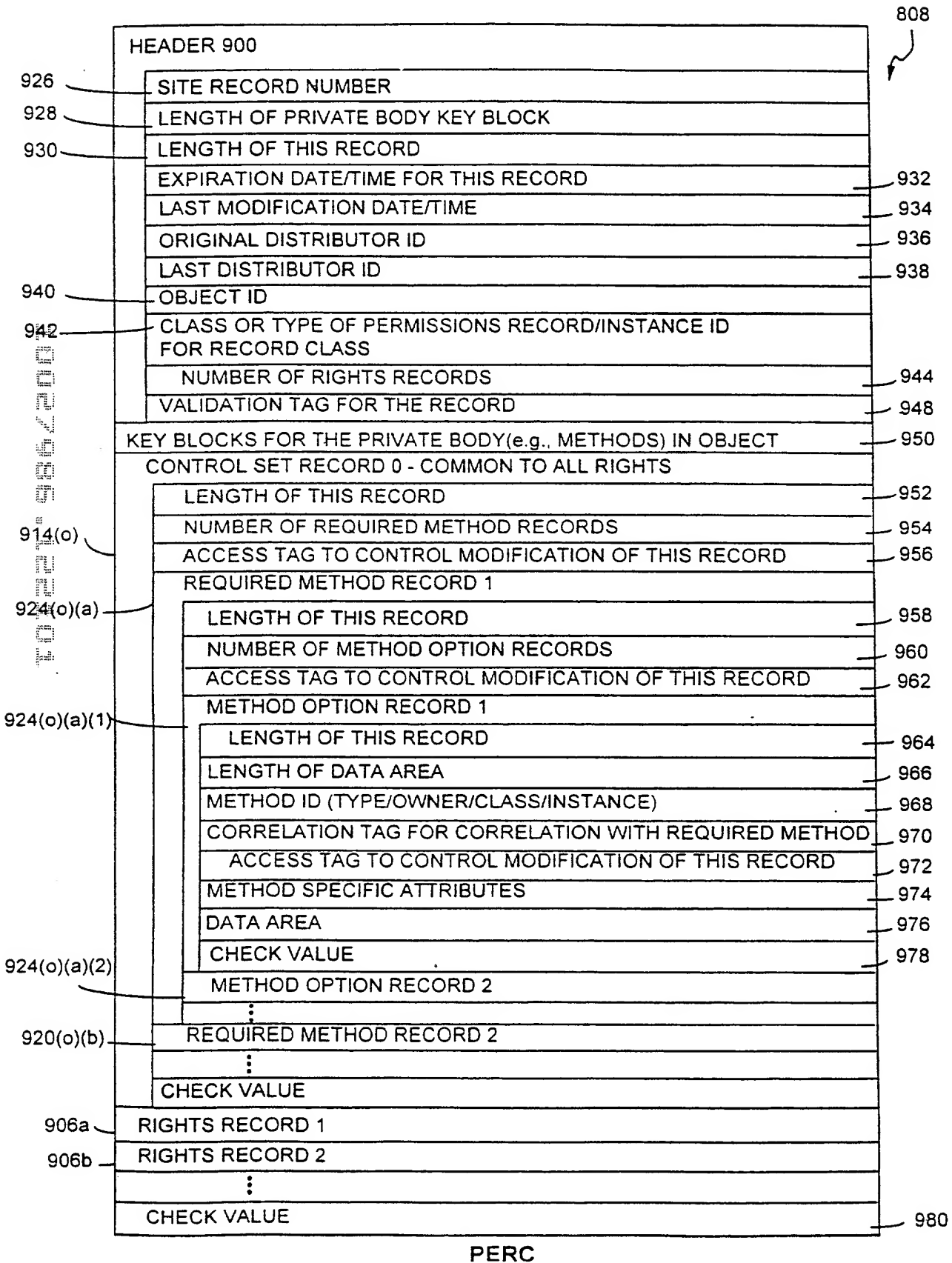


FIG. 26B

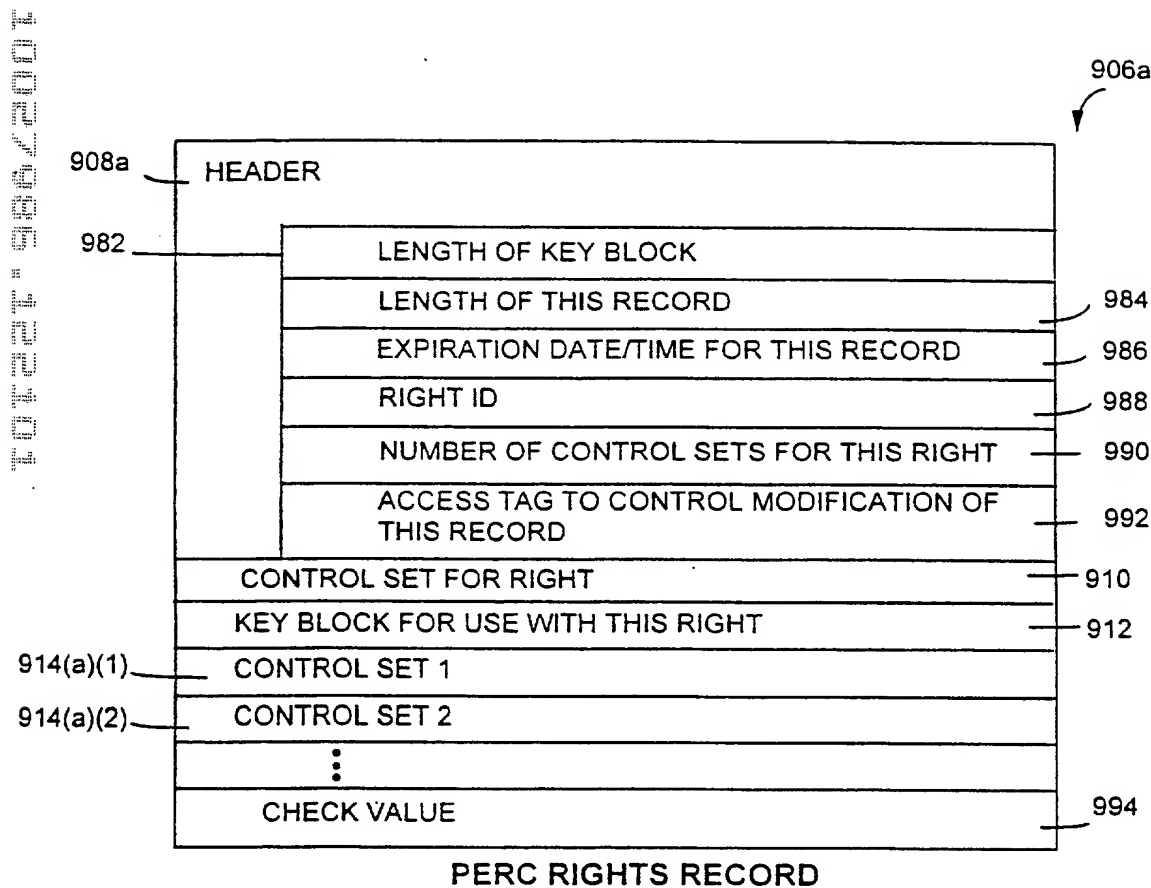


FIG. 27
SHIPPING TABLE

		444A(1)	
HEADER 444A	SITE RECORD NUMBER		444
	USER (GROUP) ID		444A(2)
	REF. TO "FIRST" COMPLETED OUTGOING SHIPPING RECORD		444A(3)
	REF. TO "LAST" COMPLETED OUTGOING SHIPPING RECORD		444A(4)
	REF. TO "FIRST" SCHEDULED OUTGOING SHIPPING RECORD		444A(5)
	REF. TO "LAST" SCHEDULED OUTGOING SHIPPING RECORD		444A(6)
	VALIDATION TAG FROM NAME SERVICES RECORD		444A(7)
	VALIDATION TAG FOR "FIRST" OUTGOING SHIPPING RECORD(S)		444A(8)
	CHECK VALUE		444A(9)
SHIPPING RECORD 445(1)	SITE RECORD NUMBER		445(1)(A)
	FIRST DATE/TIME FOR SCHEDULED SHIPMENT		445(1)(B)
	LAST DATE/TIME FOR SCHEDULED SHIPMENT		445(1)(C)
	ACTUAL DATE/TIME OF COMPLETED SHIPMENT		445(1)(D)
	OBJECT ID OF ADMINISTRATIVE OBJECT (TO BE) SHIPPED		445(1)(E)
	REF. TO ENTRY IN ADMINISTRATIVE EVENT LOG		445(1)(F)
	REF. TO NAME SERVICES RECORD NAMING RECIPIENT		445(1)(G)
	PURPOSE OF SHIPMENT		445(1)(H)
	STATUS OF SHIPMENT		445(1)(I)
	REF. TO "PREVIOUS" OUTGOING SHIPPING RECORD		445(1)(J)
	REF. TO "NEXT" OUTGOING SHIPPING RECORD		445(1)(K)
	VALIDATION TAG FROM HEADER		445(1)(L)
	VALIDATION TAG TO ADMINISTRATIVE EVENT LOG		445(1)(M)
	VALIDATION TAG TO NAME SERVICES RECORD		445(1)(N)
	VALIDATION TAG FROM PREVIOUS RECORD		445(1)(O)
	VALIDATION TAG TO NEXT RECORD		445(1)(P)
	CHECK VALUE		445(1)(Q)
	⋮		
	SHIPPING RECORD N		445(1)(R)

FIG. 28
RECEIVING TABLE

HEADER 446A	446A(1)		
	SITE RECORD NUMBER	446	
	USER (GROUP) ID	446A(2)	
	REF. TO "FIRST" COMPLETED INCOMING RECEIVING RECORD	446A(3)	
	REF. TO "LAST" COMPLETED INCOMING RECEIVING RECORD	446A(4)	
	REF. TO "FIRST" SCHEDULED INCOMING RECEIVING RECORD	446A(5)	
	REF. TO "LAST" SCHEDULED INCOMING RECEIVING RECORD	446A(6)	
	VALIDATION TAG FROM NAME SERVICES RECORD	446A(7)	
	VALIDATION TAG FOR "FIRST" INCOMING RECEIVING RECORD(S)	446A(8)	
	CHECK VALUE	446A(9)	
RECEIVING RECORD 447(1)	SITE RECORD NUMBER	447(1)(A)	
	FIRST DATE/TIME FOR SCHEDULED RECEPTION	447(1)(B)	
	LAST DATE/TIME FOR SCHEDULED RECEPTION	447(1)(C)	
	ACTUAL DATE/TIME OF COMPLETED RECEPTION	447(1)(D)	
	OBJECT ID OF ADMINISTRATIVE OBJECT (TO BE) RECEIVED	447(1)(E)	
	REF. TO ENTRY IN ADMINISTRATIVE EVENT LOG	447(1)(F)	
	REF. TO NAME SERVICES RECORD NAMING SENDER	447(1)(G)	
	PURPOSE OF RECEPTION	447(1)(H)	
	STATUS OF RECEPTION	447(1)(I)	
	REF. TO "PREVIOUS" INCOMING RECEIVING RECORD	447(1)(J)	
	REF. TO "NEXT" INCOMING RECEIVING RECORD	447(1)(K)	
	VALIDATION TAGS	447(1)(L)	
	CHECK VALUE	447(1)(M)	
	⋮		
	RECEIVING RECORD N	447(2)	

FIG. 29

ADMINISTRATIVE EVENT LOG

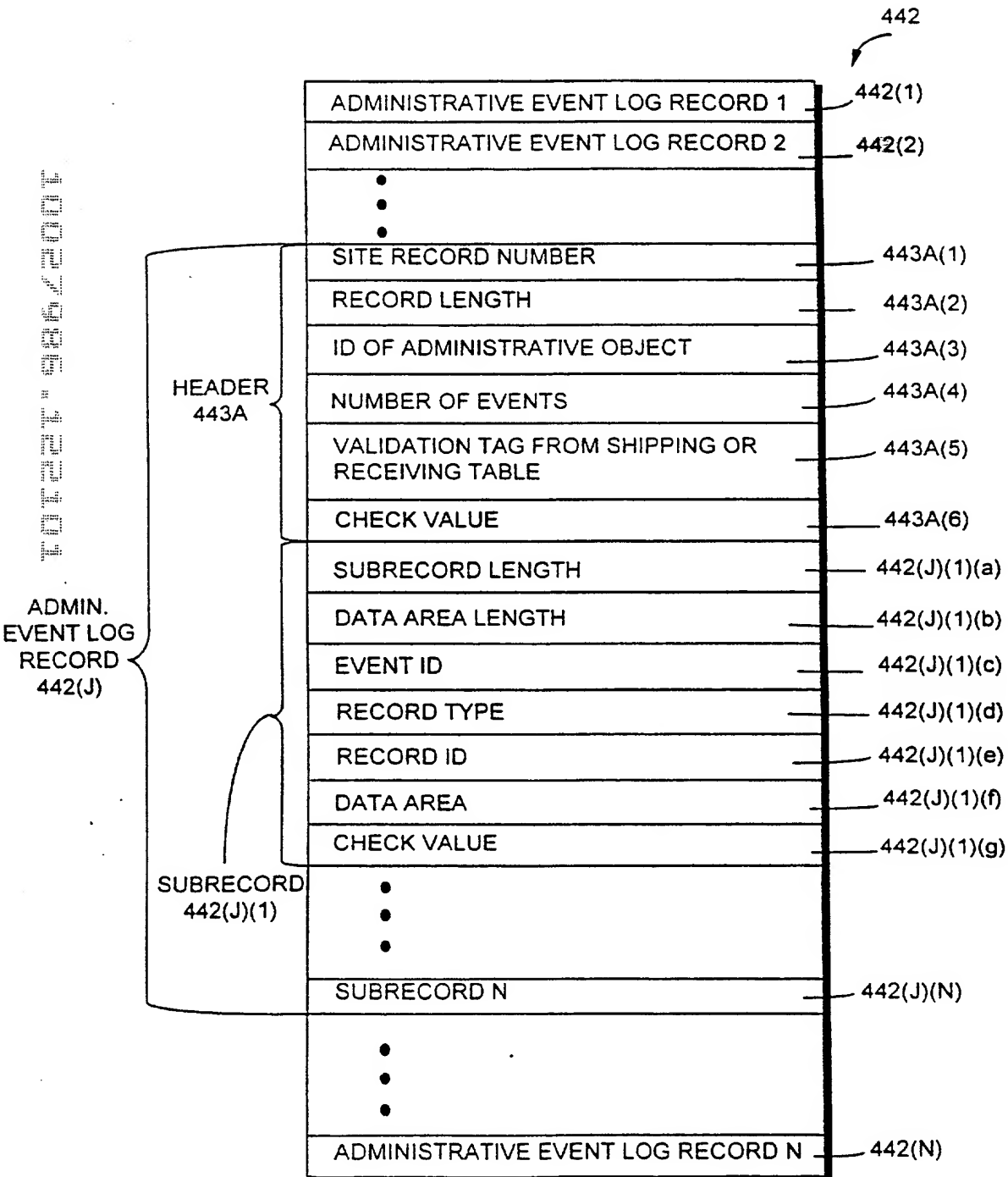
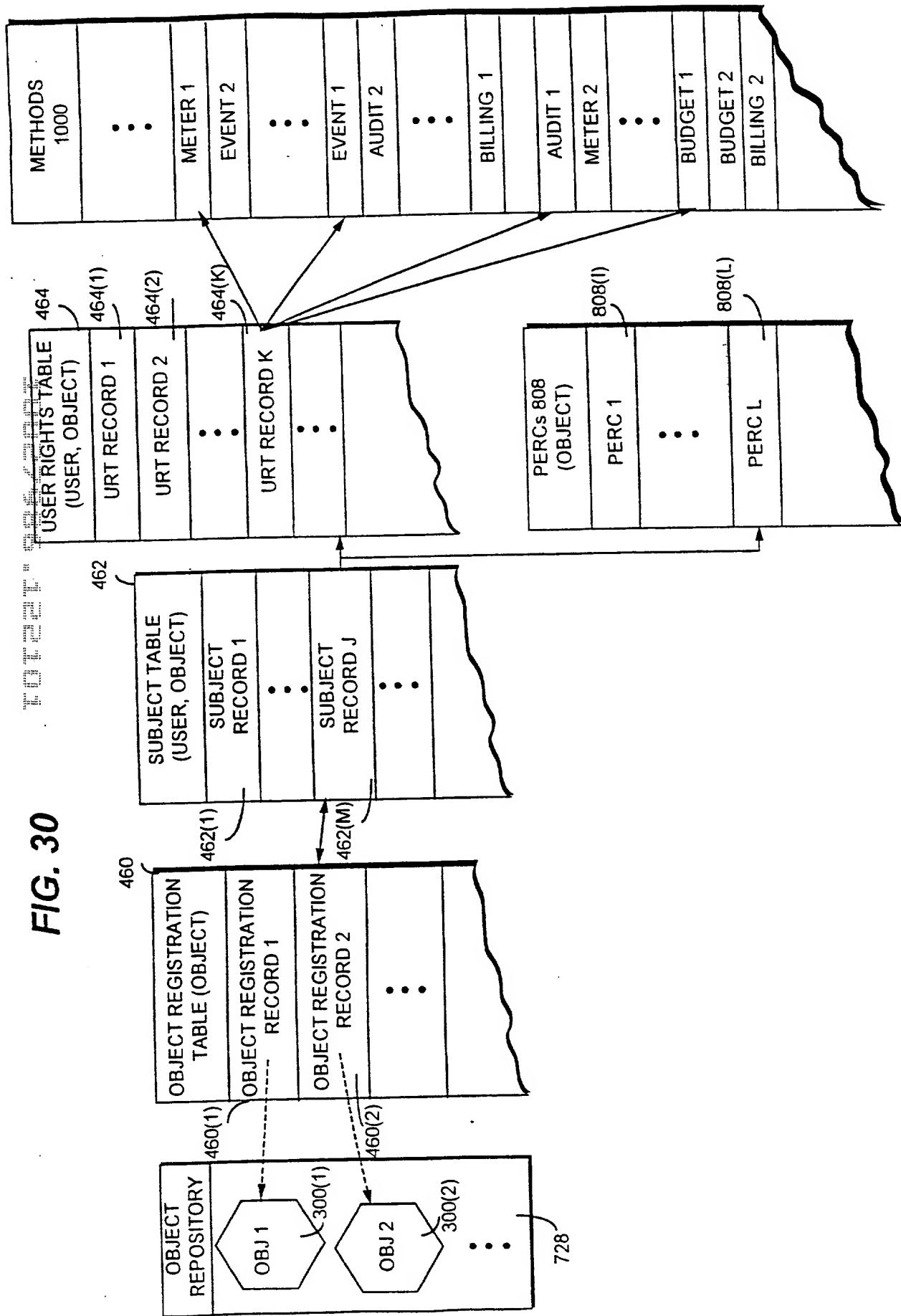


FIG. 30



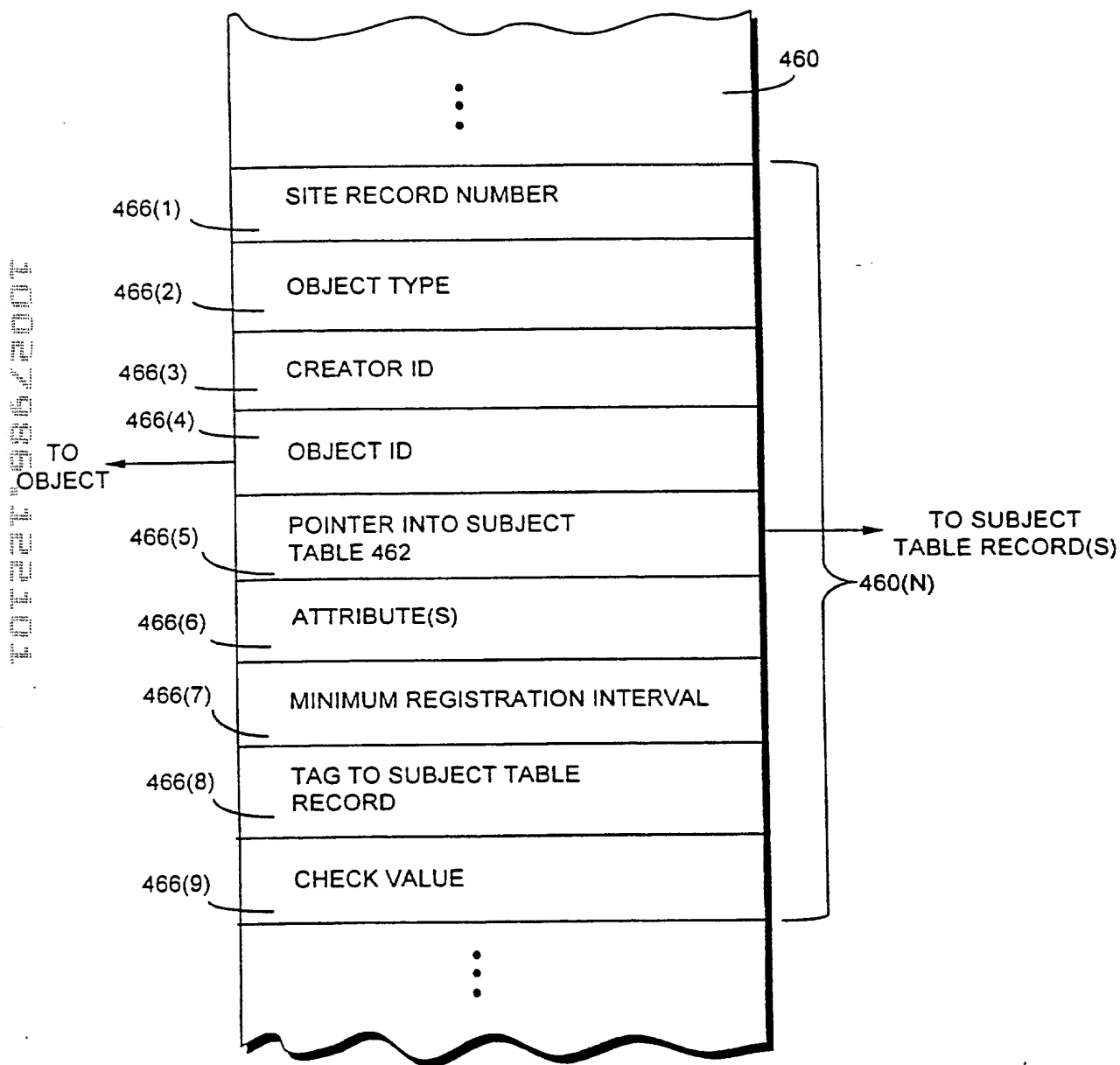


FIG. 31
OBJECT REGISTRATION TABLE

FIG. 32

SUBJECT
TABLE

"HEADER"
468

SUBJECT
RECORD
470(1)

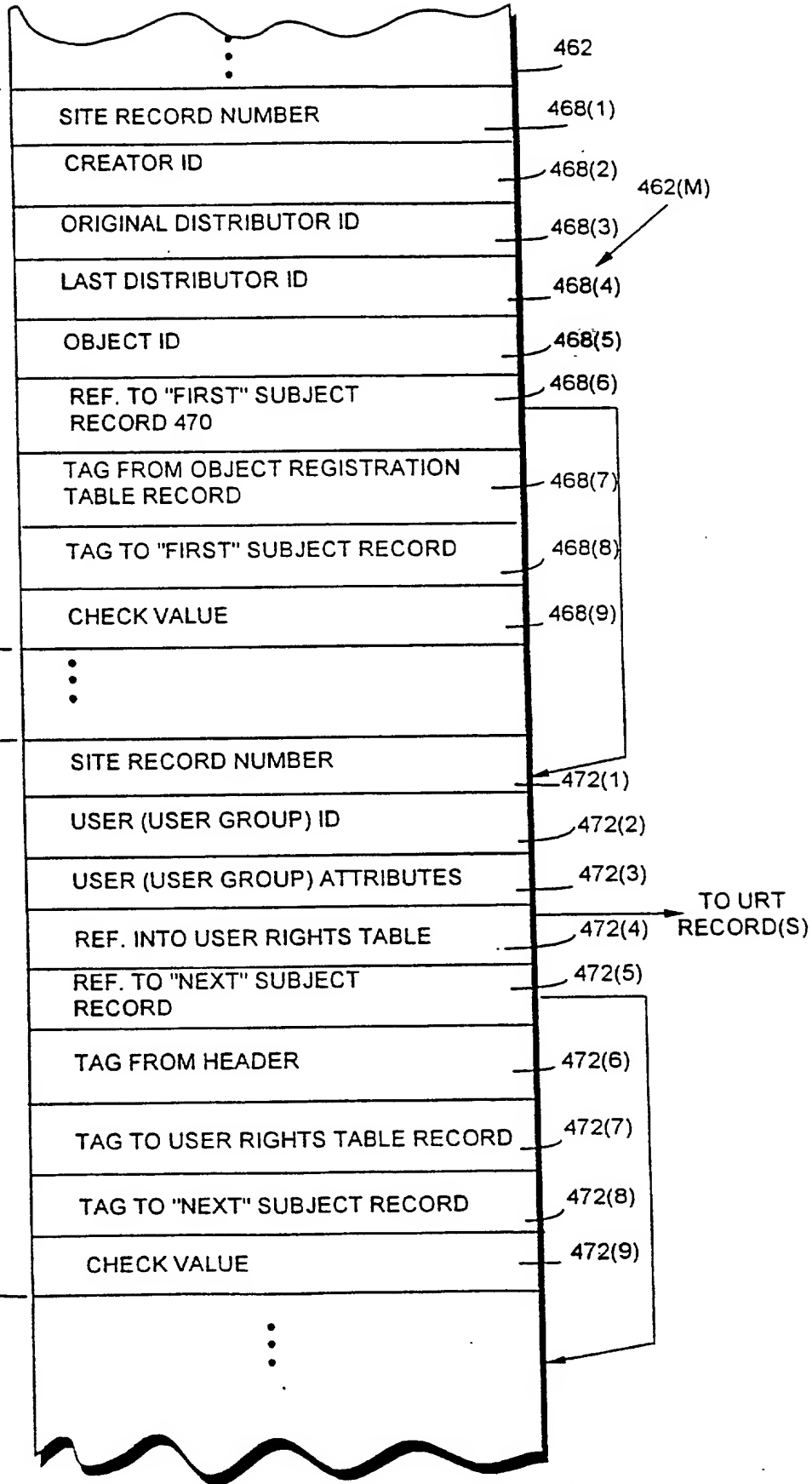


FIG. 33 USER RIGHTS TABLE

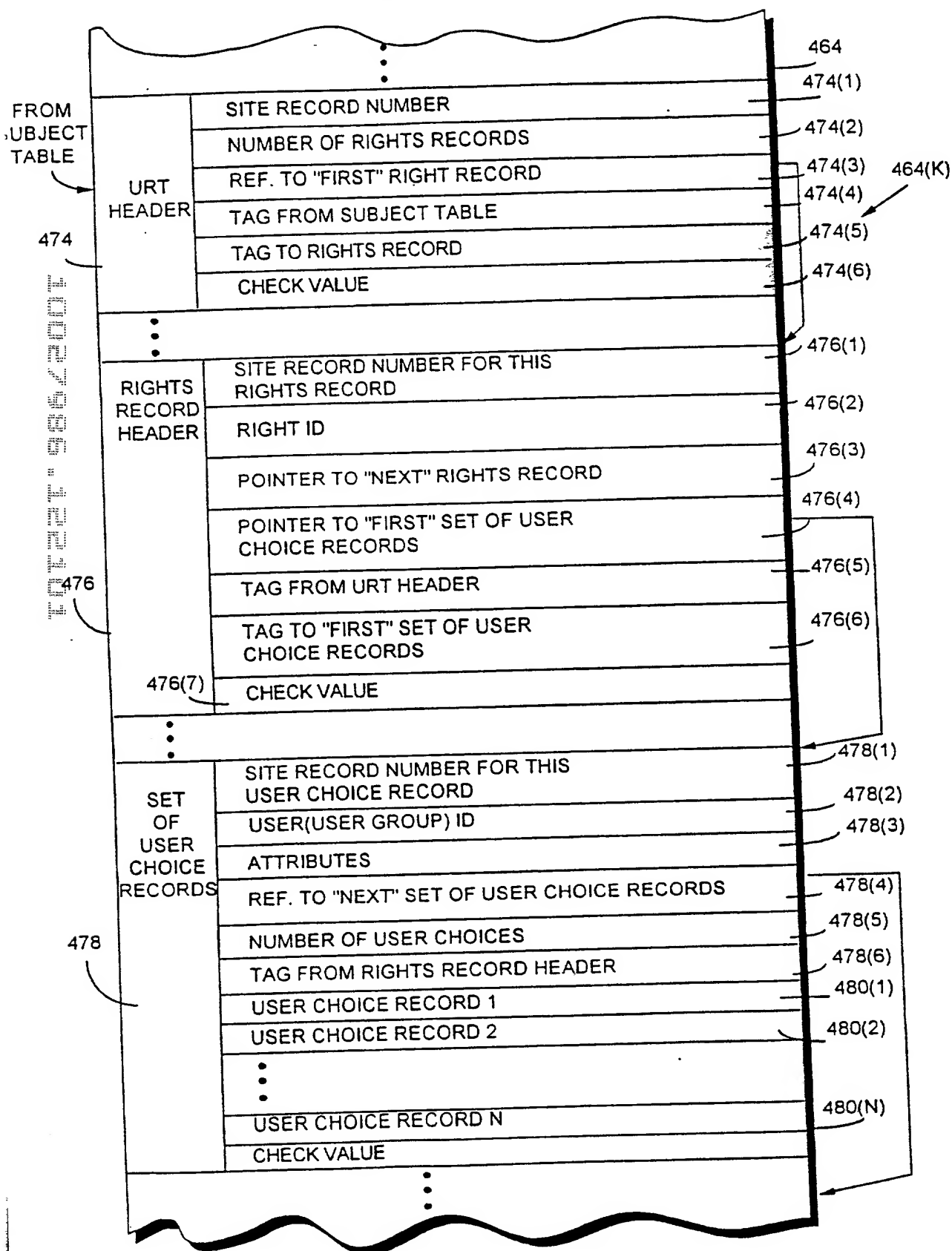


FIG. 34

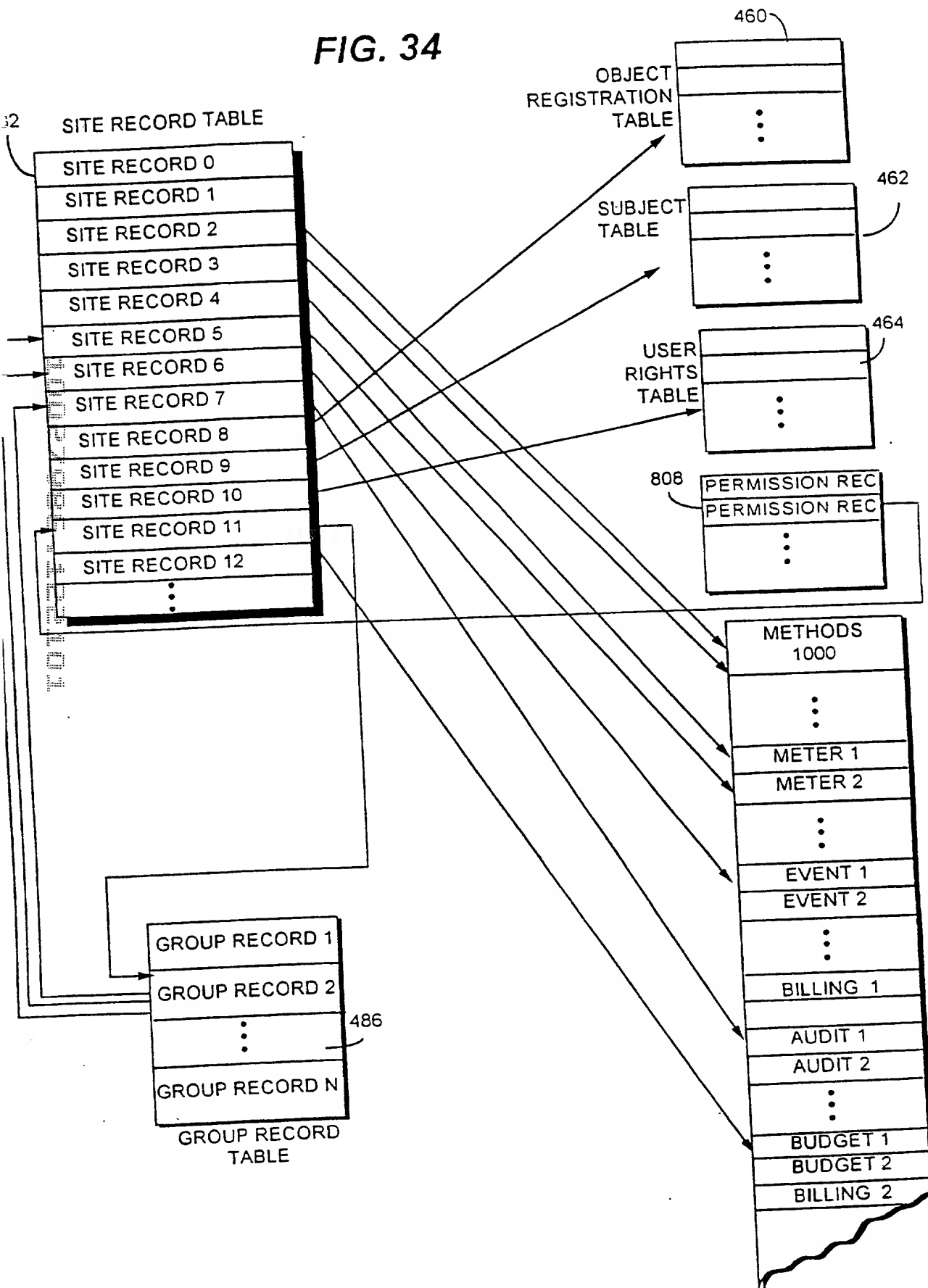
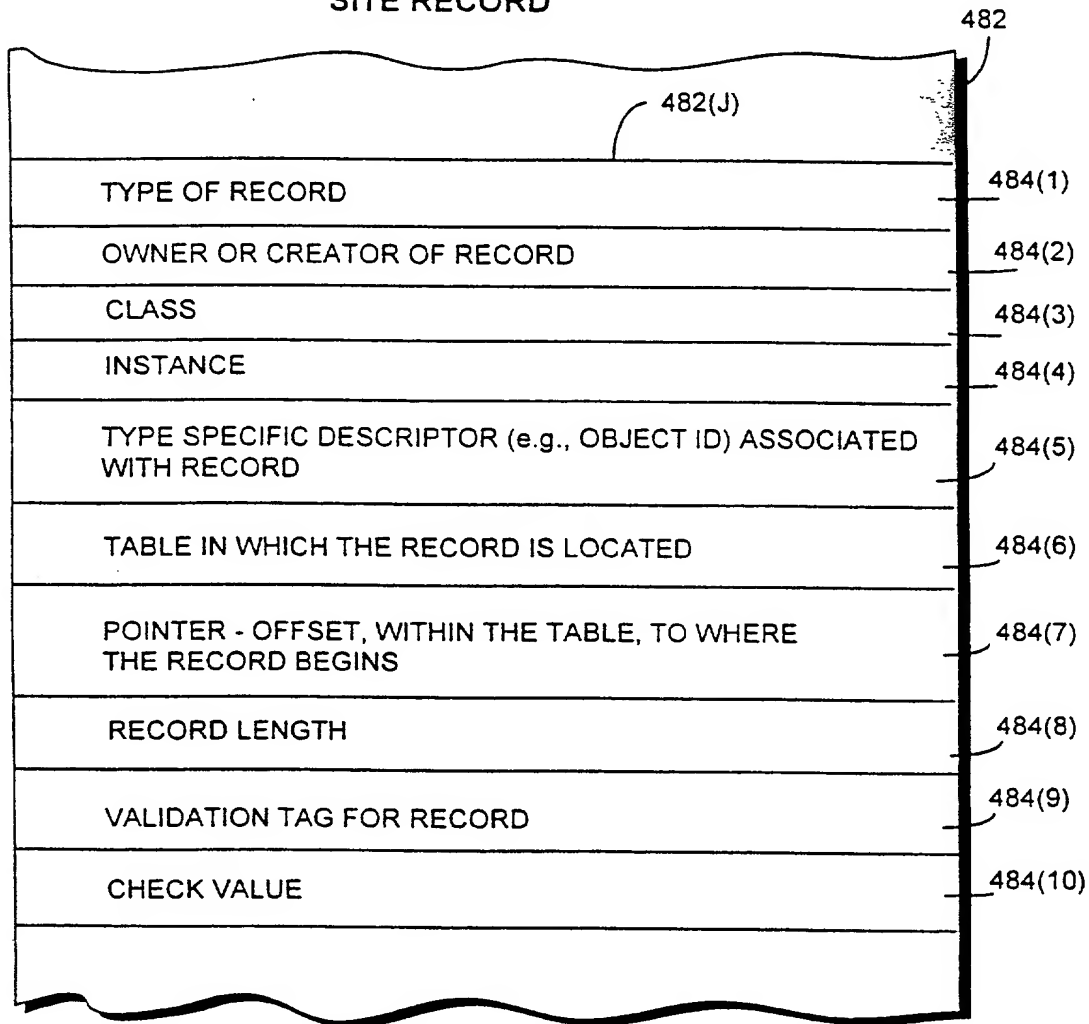


FIG. 34A

SITE RECORD



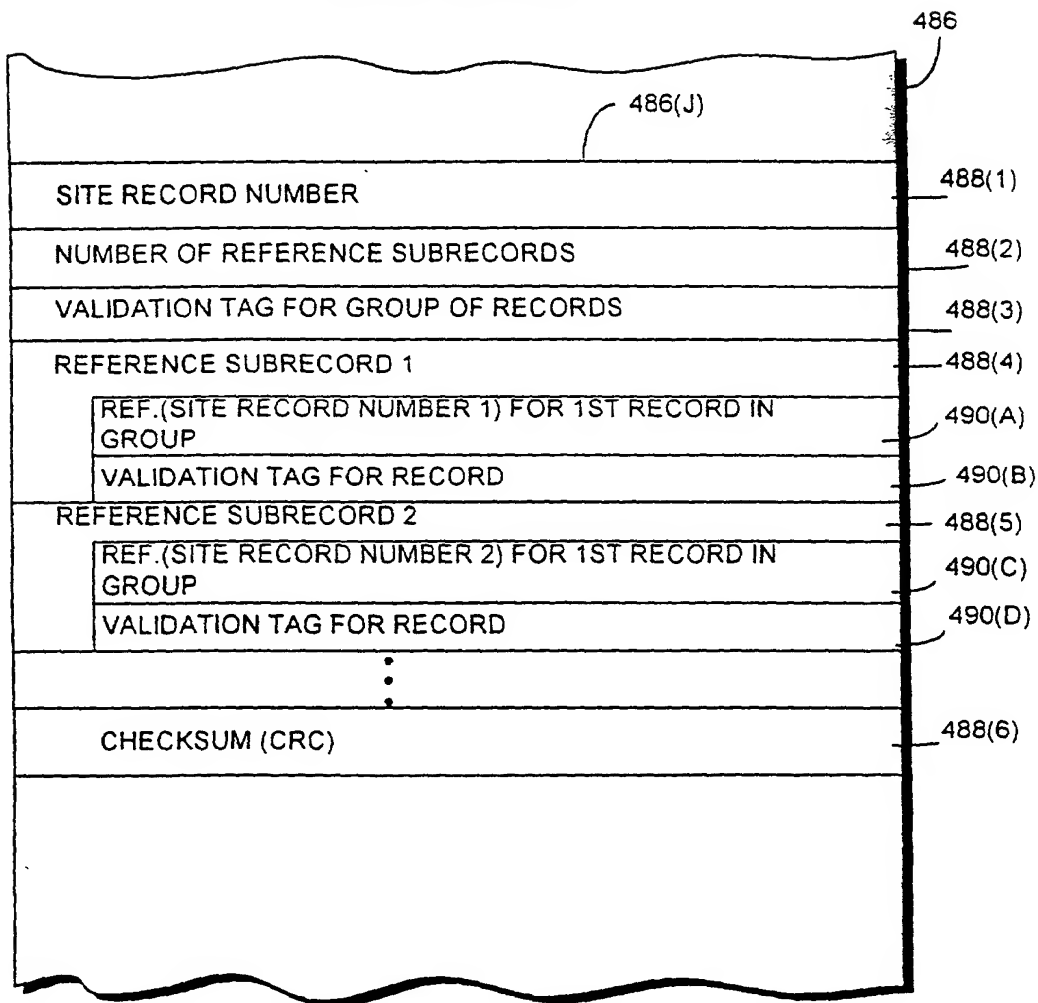
The diagram illustrates a 'SITE RECORD' structure, designated by the reference numeral 482. It is depicted as a vertical stack of ten fields, each enclosed in a rectangular box. The top of the structure is indicated by a wavy line, and the bottom by another wavy line. A bracket on the right side of the entire stack is labeled 482. Each field is labeled on the right with a reference numeral from 484(1) to 484(10). The first field, 484(1), is labeled 'TYPE OF RECORD'. The second field, 484(2), is labeled 'OWNER OR CREATOR OF RECORD'. The third field, 484(3), is labeled 'CLASS'. The fourth field, 484(4), is labeled 'INSTANCE'. The fifth field, 484(5), is labeled 'TYPE SPECIFIC DESCRIPTOR (e.g., OBJECT ID) ASSOCIATED WITH RECORD'. The sixth field, 484(6), is labeled 'TABLE IN WHICH THE RECORD IS LOCATED'. The seventh field, 484(7), is labeled 'POINTER - OFFSET, WITHIN THE TABLE, TO WHERE THE RECORD BEGINS'. The eighth field, 484(8), is labeled 'RECORD LENGTH'. The ninth field, 484(9), is labeled 'VALIDATION TAG FOR RECORD'. The tenth field, 484(10), is labeled 'CHECK VALUE'. A label 482(J) is positioned above the first field, 484(1).

482(J)		482
TYPE OF RECORD		484(1)
OWNER OR CREATOR OF RECORD		484(2)
CLASS		484(3)
INSTANCE		484(4)
TYPE SPECIFIC DESCRIPTOR (e.g., OBJECT ID) ASSOCIATED WITH RECORD		484(5)
TABLE IN WHICH THE RECORD IS LOCATED		484(6)
POINTER - OFFSET, WITHIN THE TABLE, TO WHERE THE RECORD BEGINS		484(7)
RECORD LENGTH		484(8)
VALIDATION TAG FOR RECORD		484(9)
CHECK VALUE		484(10)

FIG. 34B

GROUP RECORD

FIG. 34B



1150

START

FIG. 35

1152

APPLIANCE CALLS CLEARINGHOUSE

1154

APPLIANCE AND CLEARINGHOUSE AUTHENTICATE ONE
ANOTHER AND AGREE ON A MESSAGE KEY

1156

DOES APPLIANCE HAVE
AUDIT INFO TO SEND?

YES

NO

1158

APPLIANCE SENDS ADMINISTRATIVE OBJECT(S)
CONTAINING AUDIT INFO

1160

CLEARINGHOUSE SENDS RESPONSIVE ADMIN. OBJECT(S)

1162

APPLIANCE UPDATES SECURE DATABASE
BASED ON OBJECTS RECEIVED

1163

DOES
APPLIANCE HAVE
REQUESTS TO SEND
?

Y

N

1164

APPLIANCE SENDS ADMINISTRATIVE OBJECT(S)
REQUESTING BUDGETS AND/OR PERMISSIONS

1166

CLEARINGHOUSE SENDS RESPONSIVE
ADMINISTRATIVE OBJECT(S)

1168

APPLIANCE UPDATES SECURE DATABASE BASED
ON OBJECTS RECEIVED

END

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10027986 122101

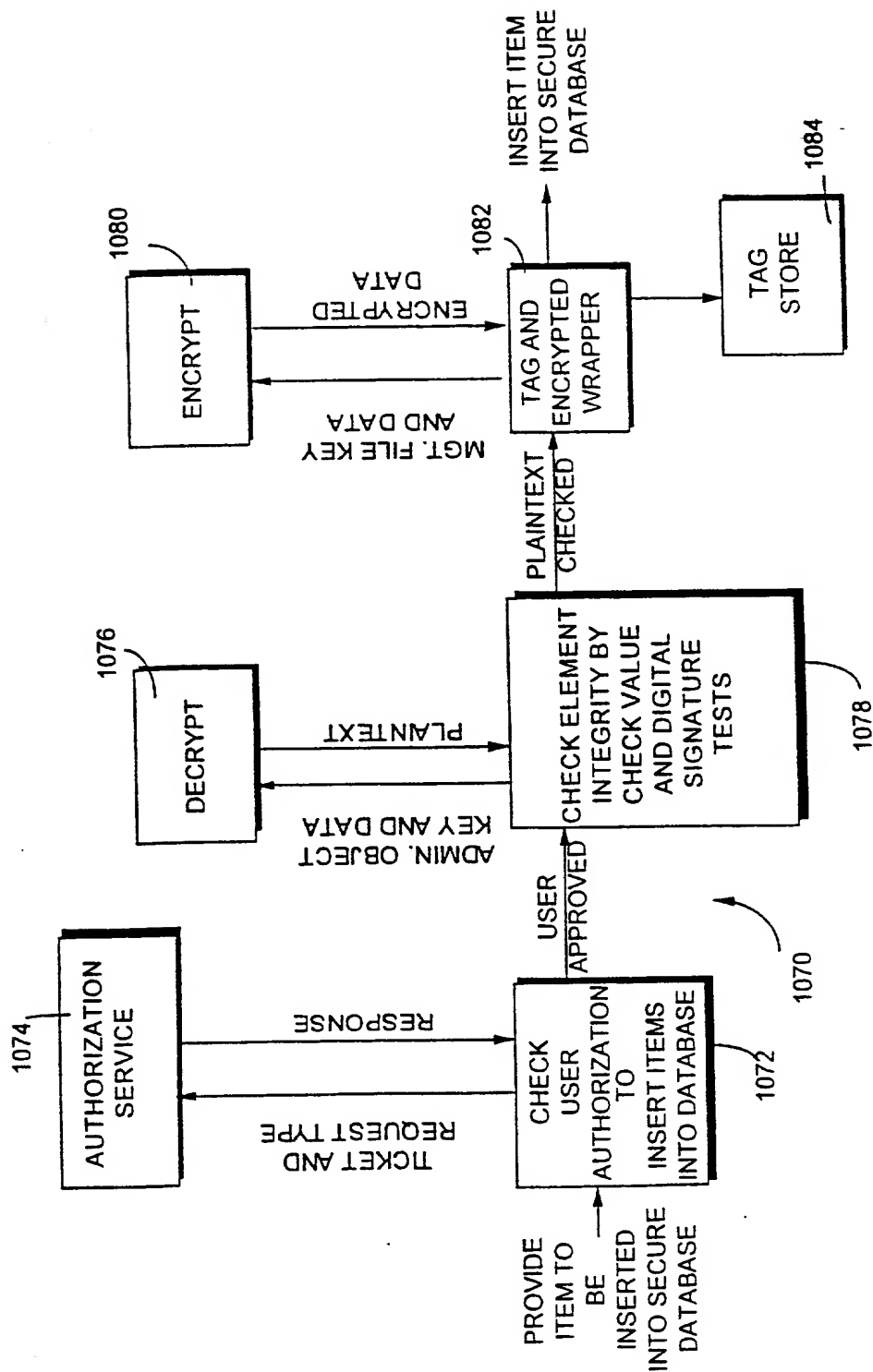


FIG. 37

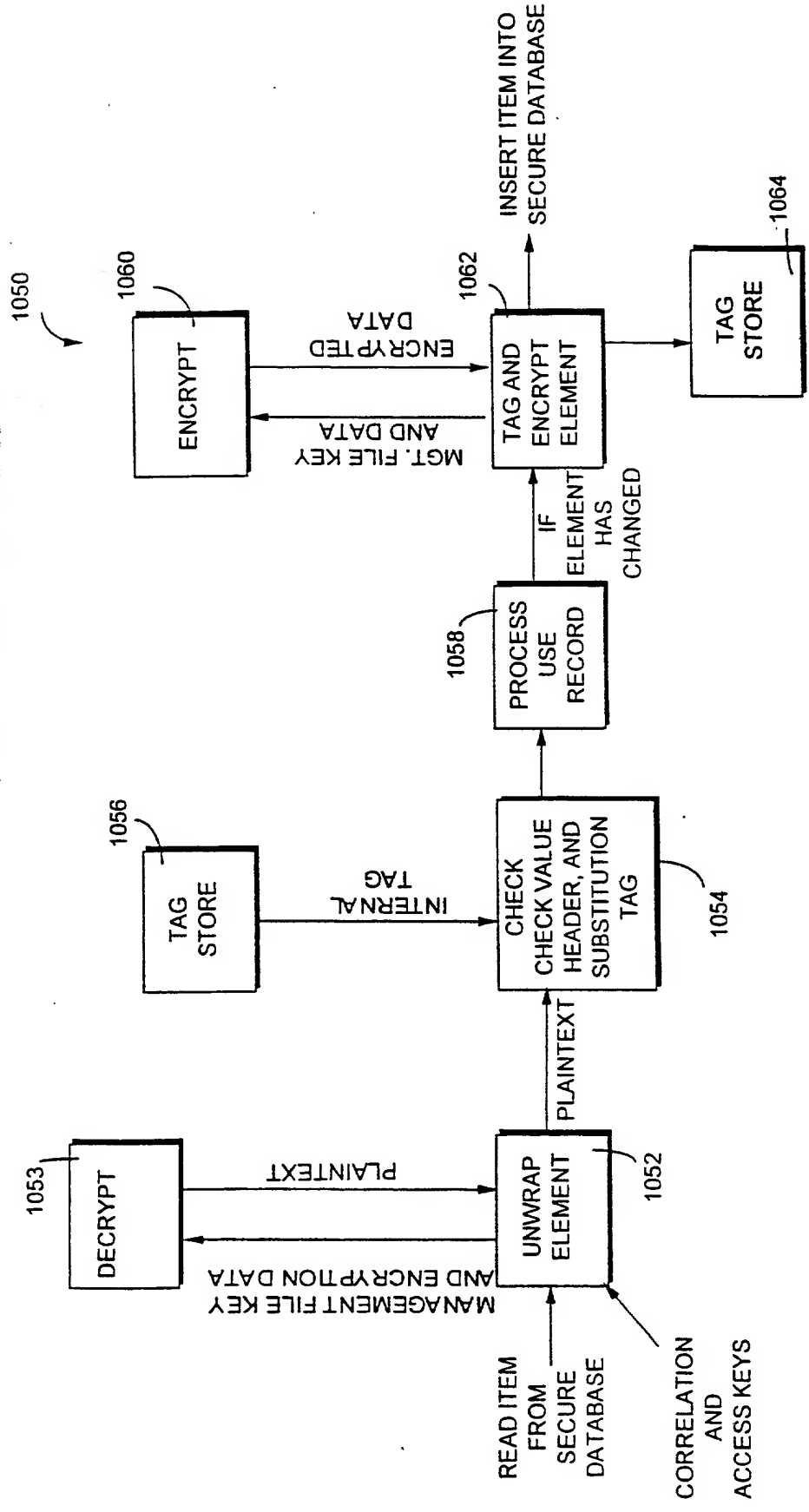
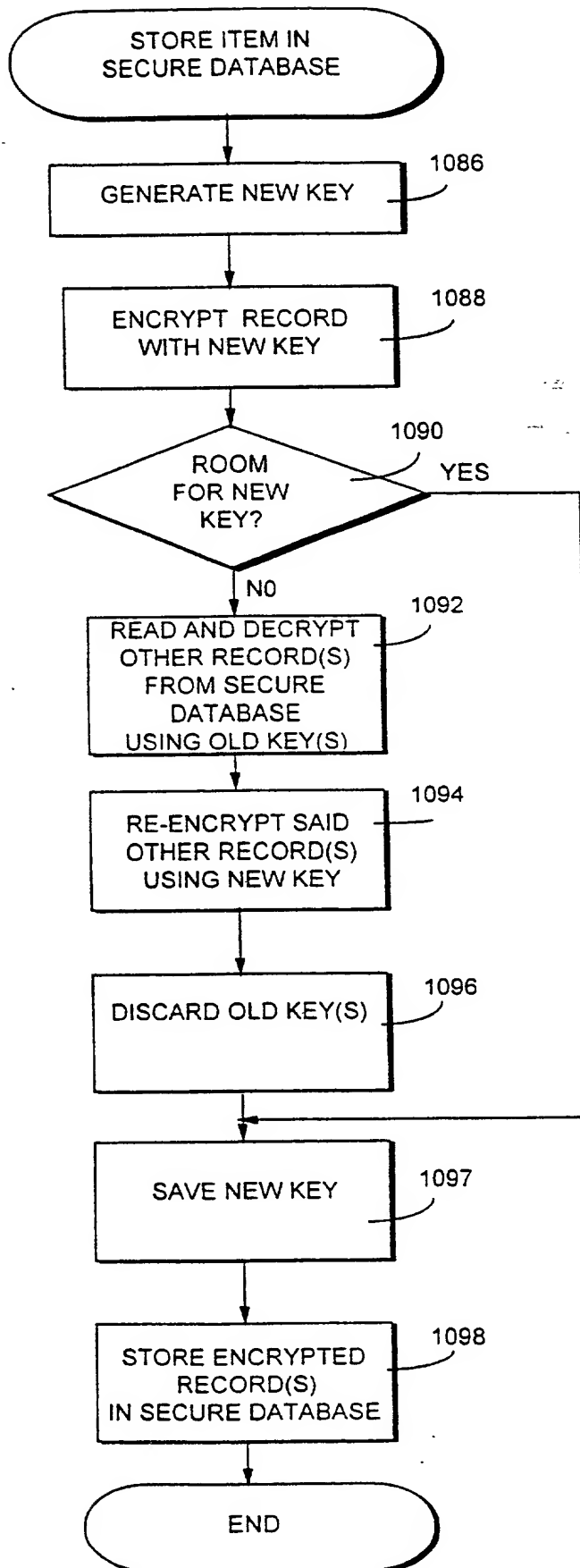


FIG. 38



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FIG. 39
BACKUP

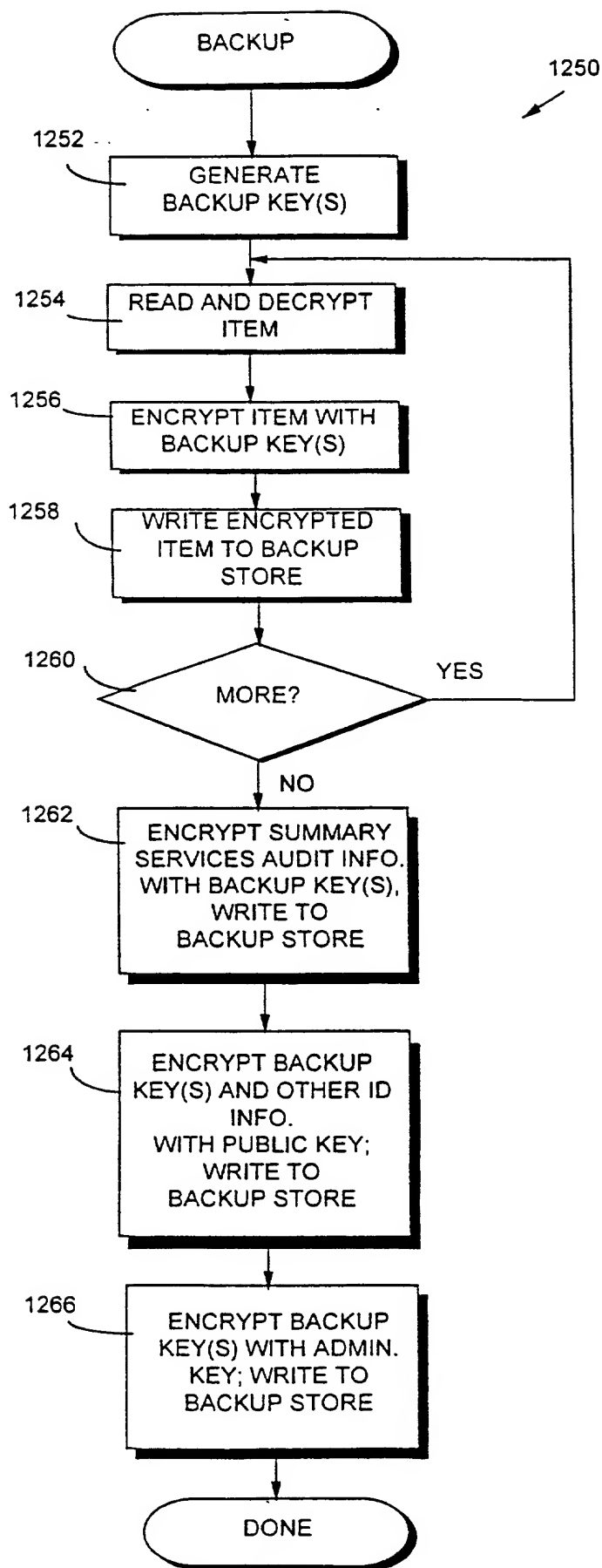
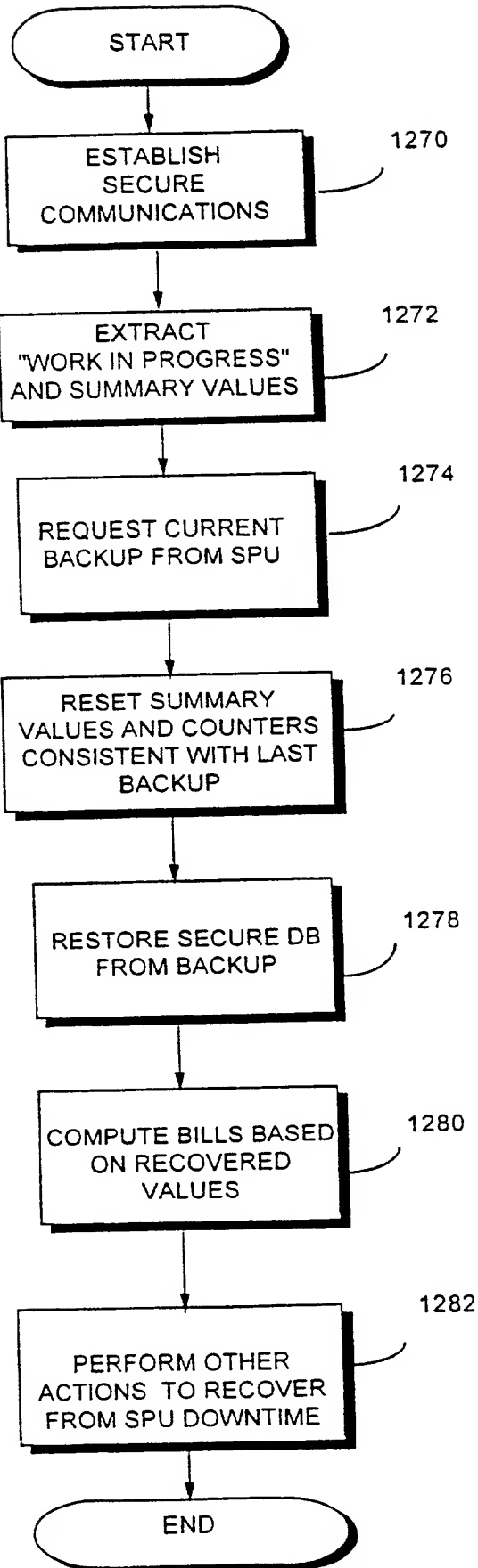


FIG. 40

RECOVER SECURE DATABASE

1268



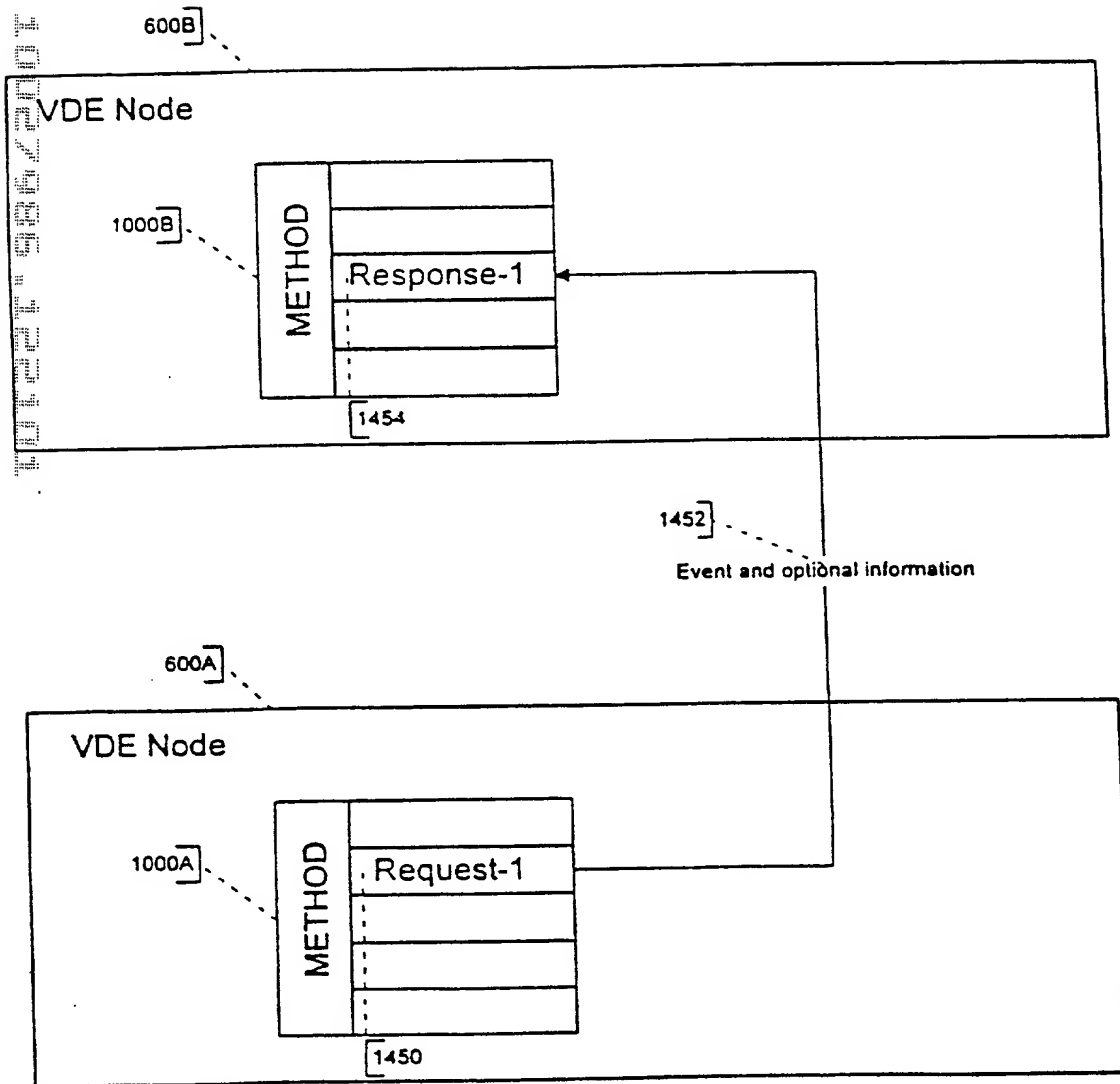


Figure 41a

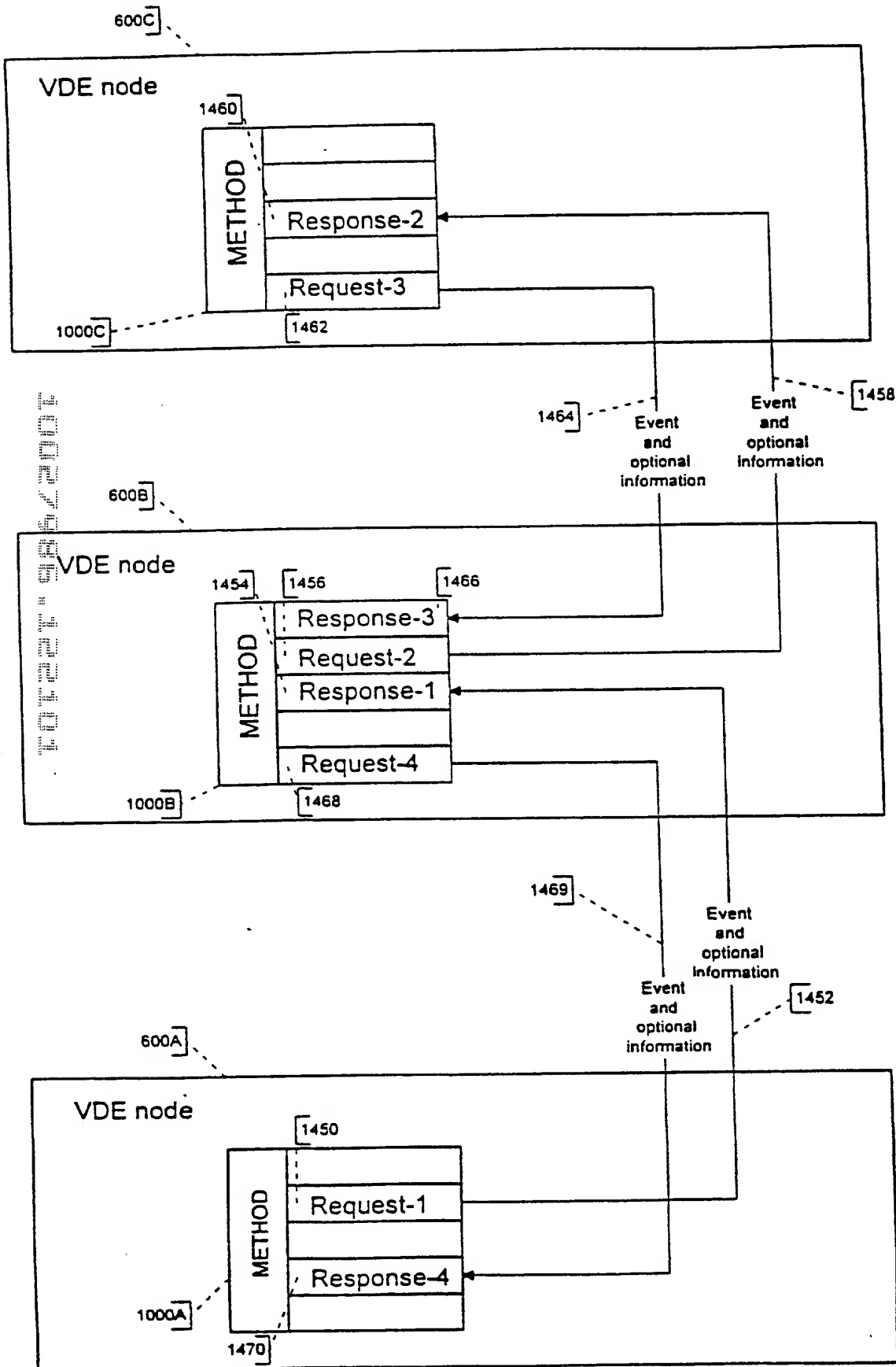


Figure 41c

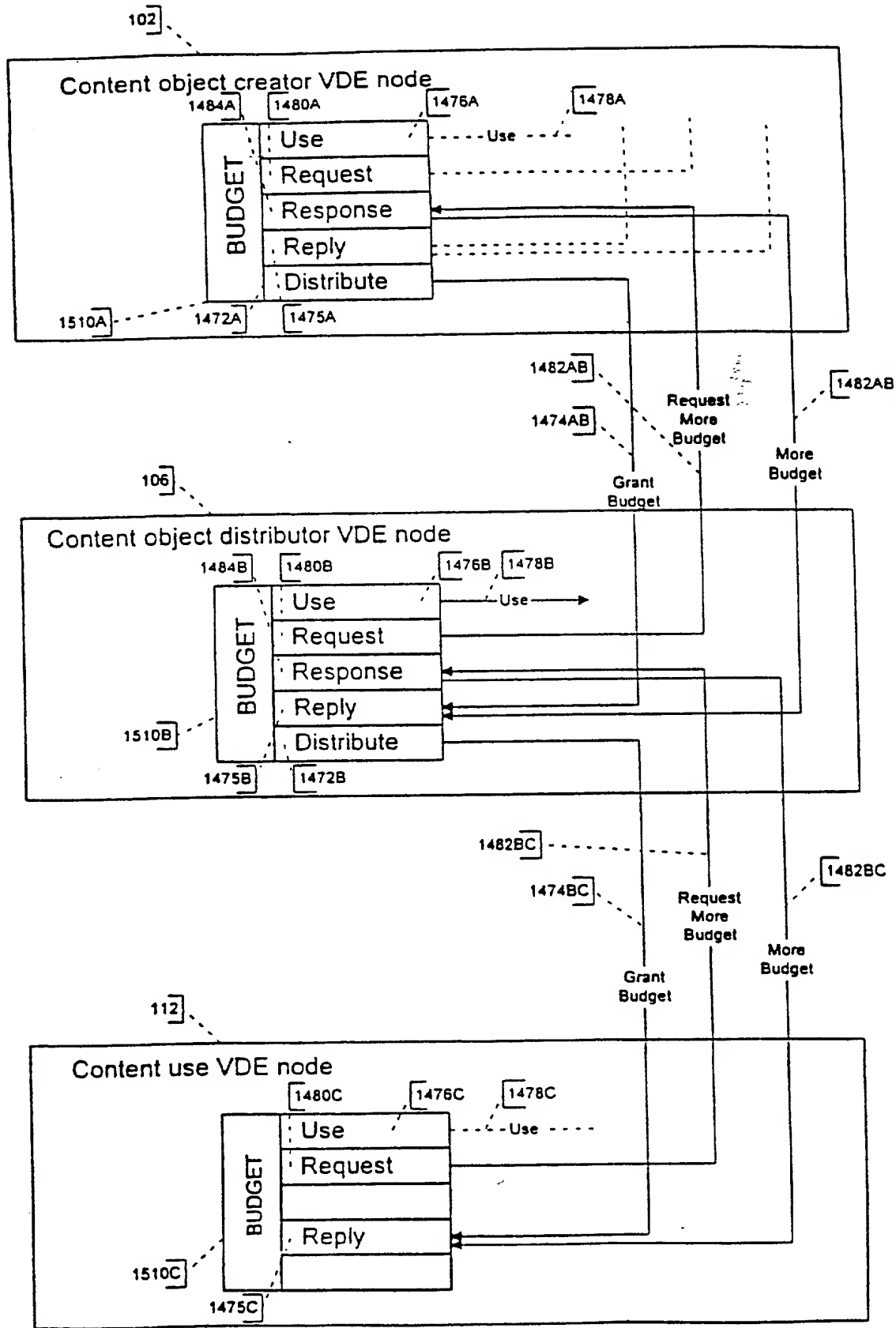


Figure 41d

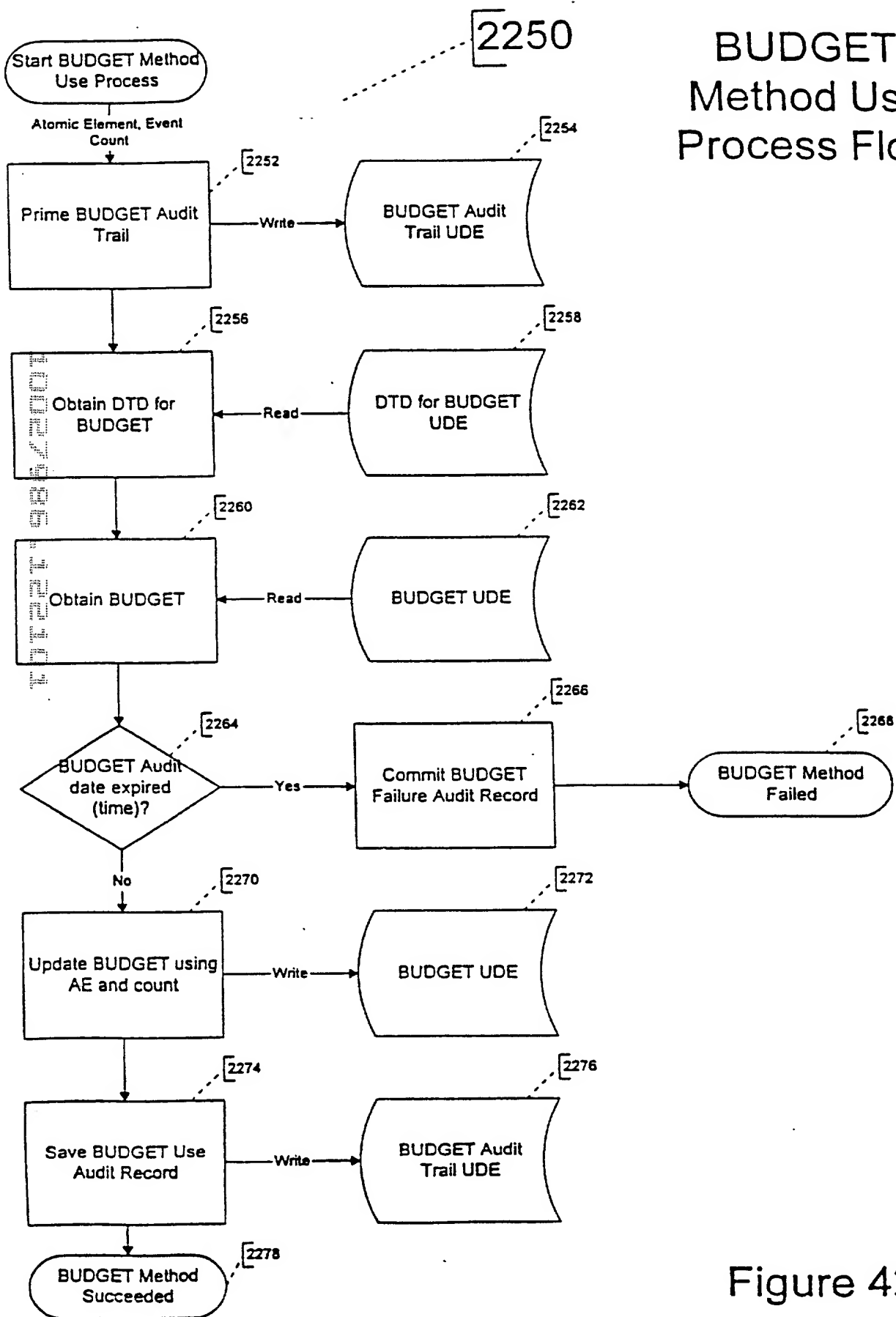


Figure 42a

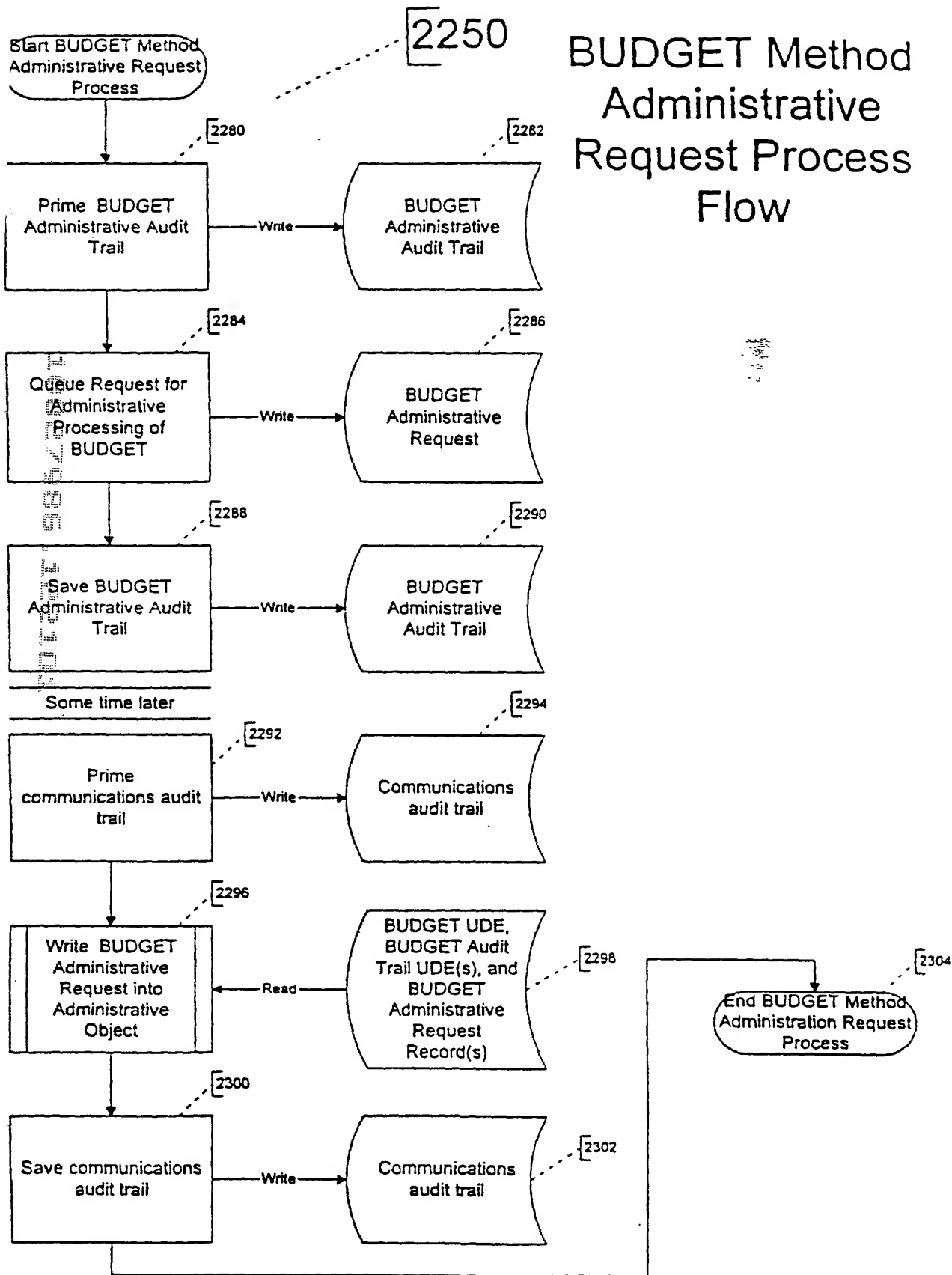
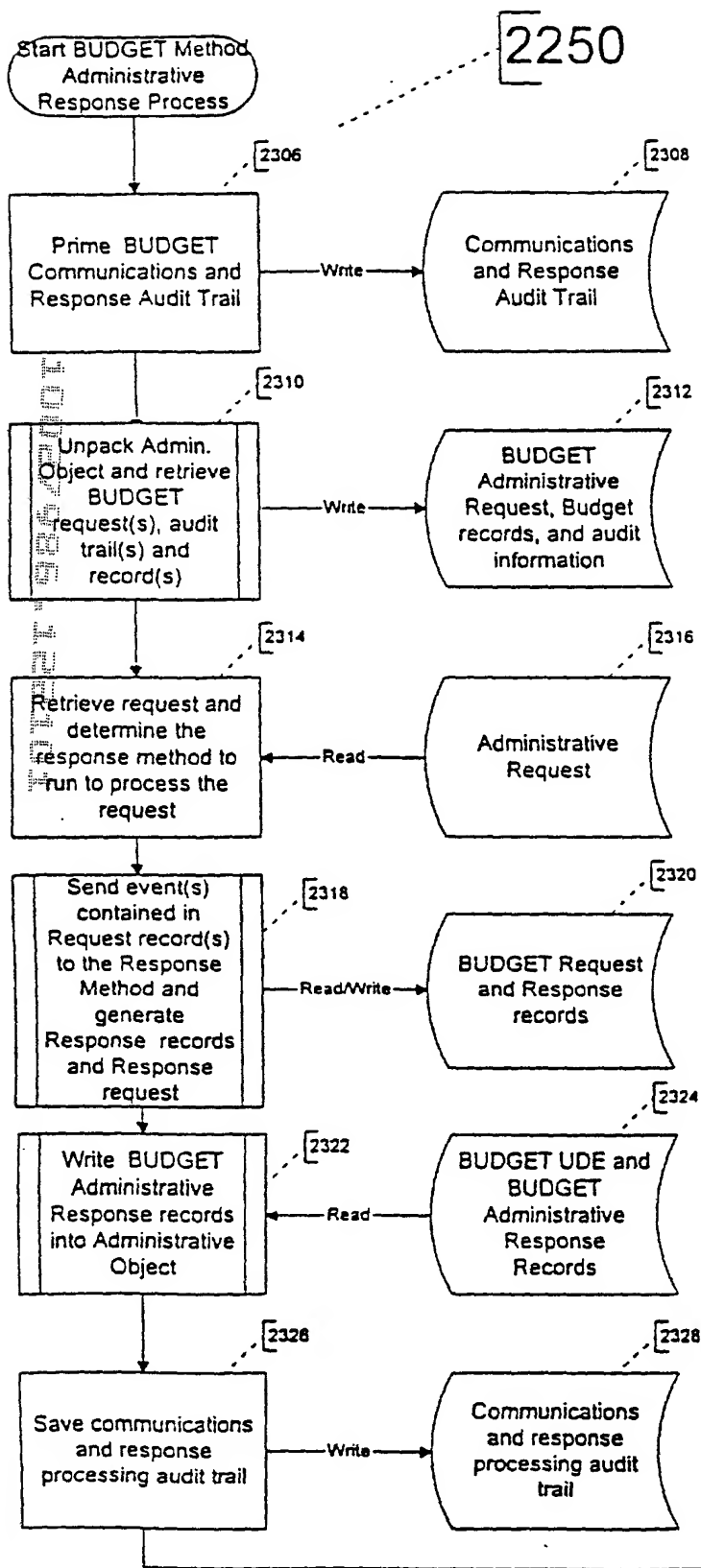


Figure 42b



BUDGET Method Administrative Response Process Flow

Figure 42c

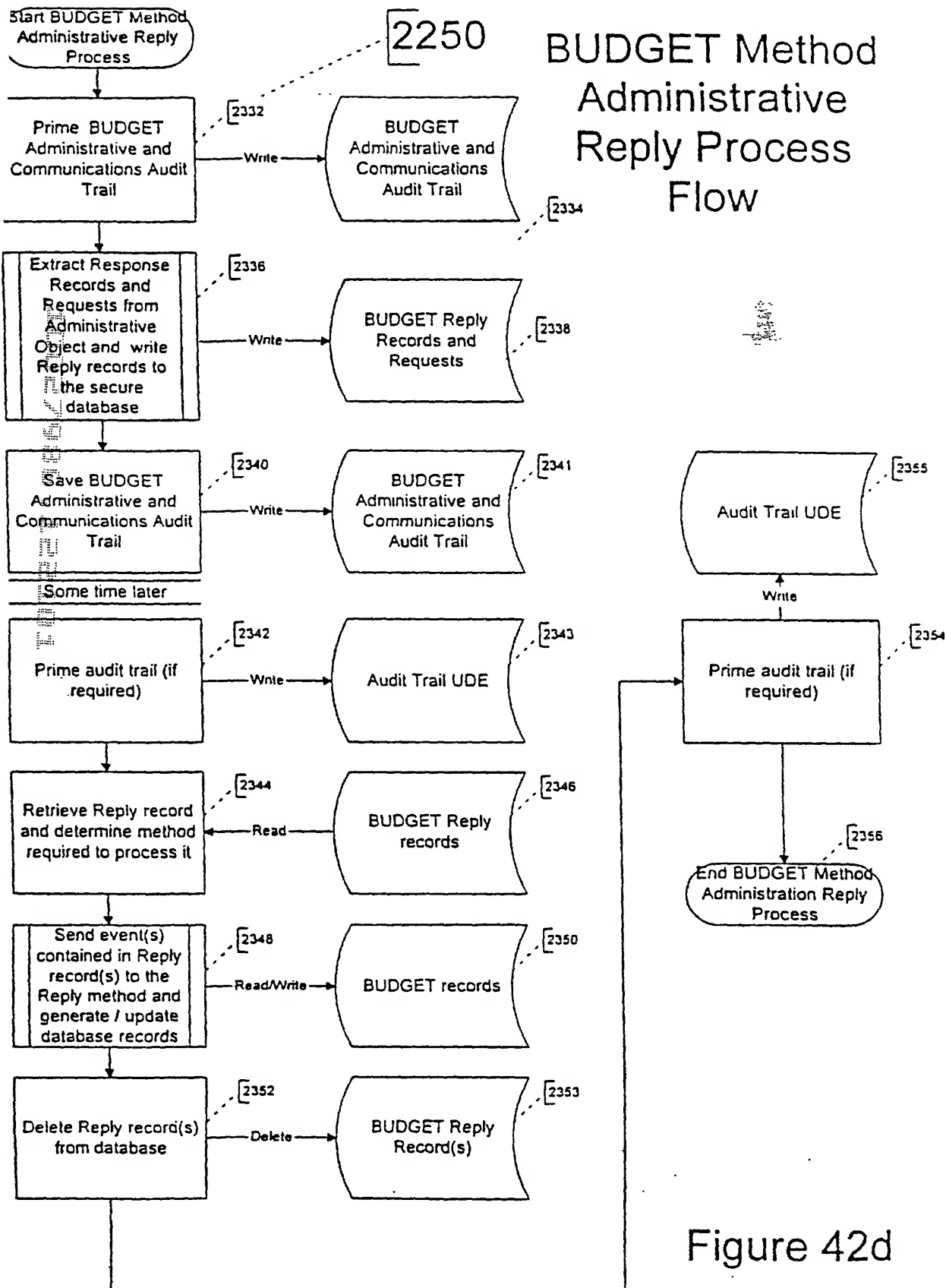
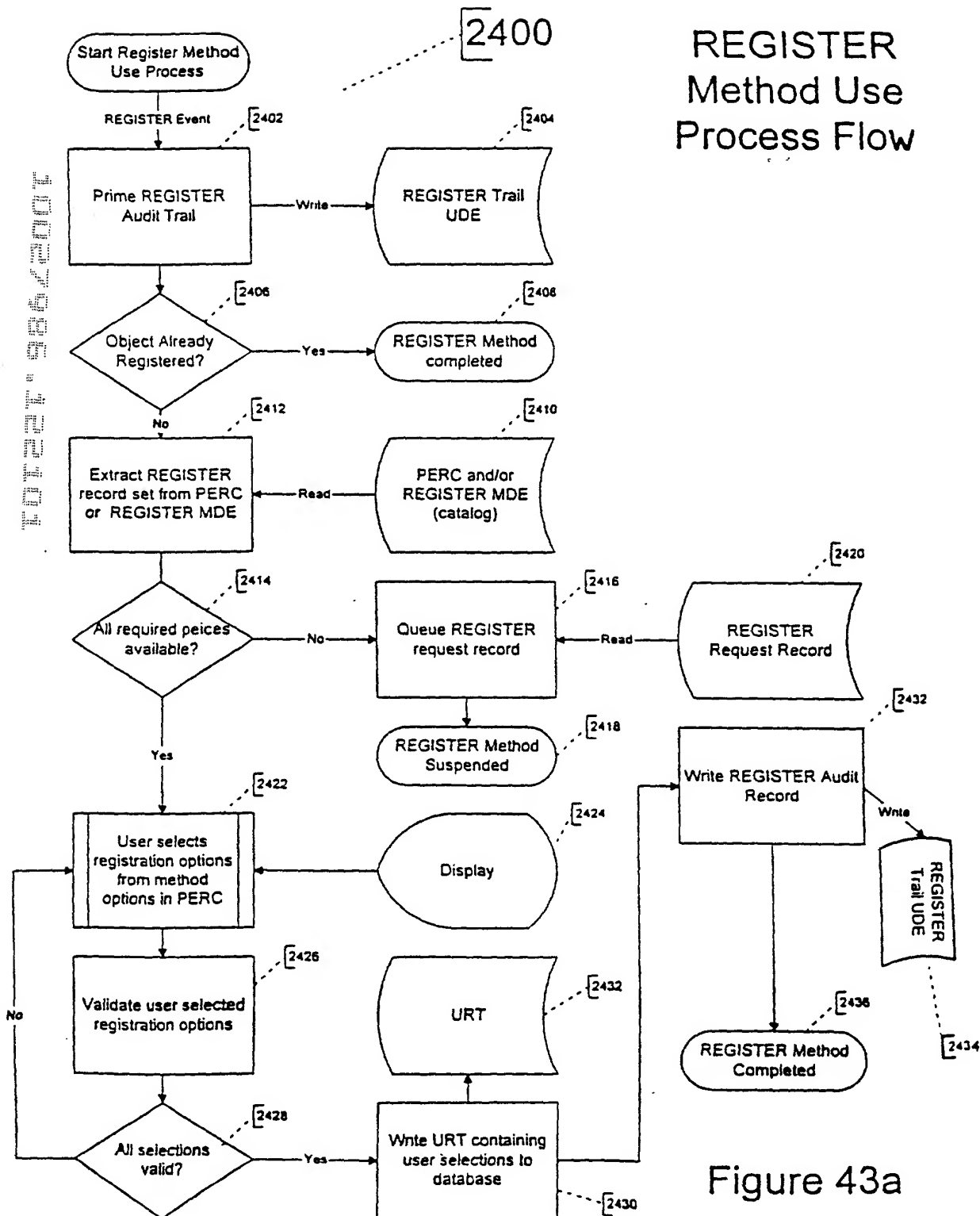


Figure 42d

REGISTER Method Use Process Flow



REGISTER Method Administrative Request Process Flow

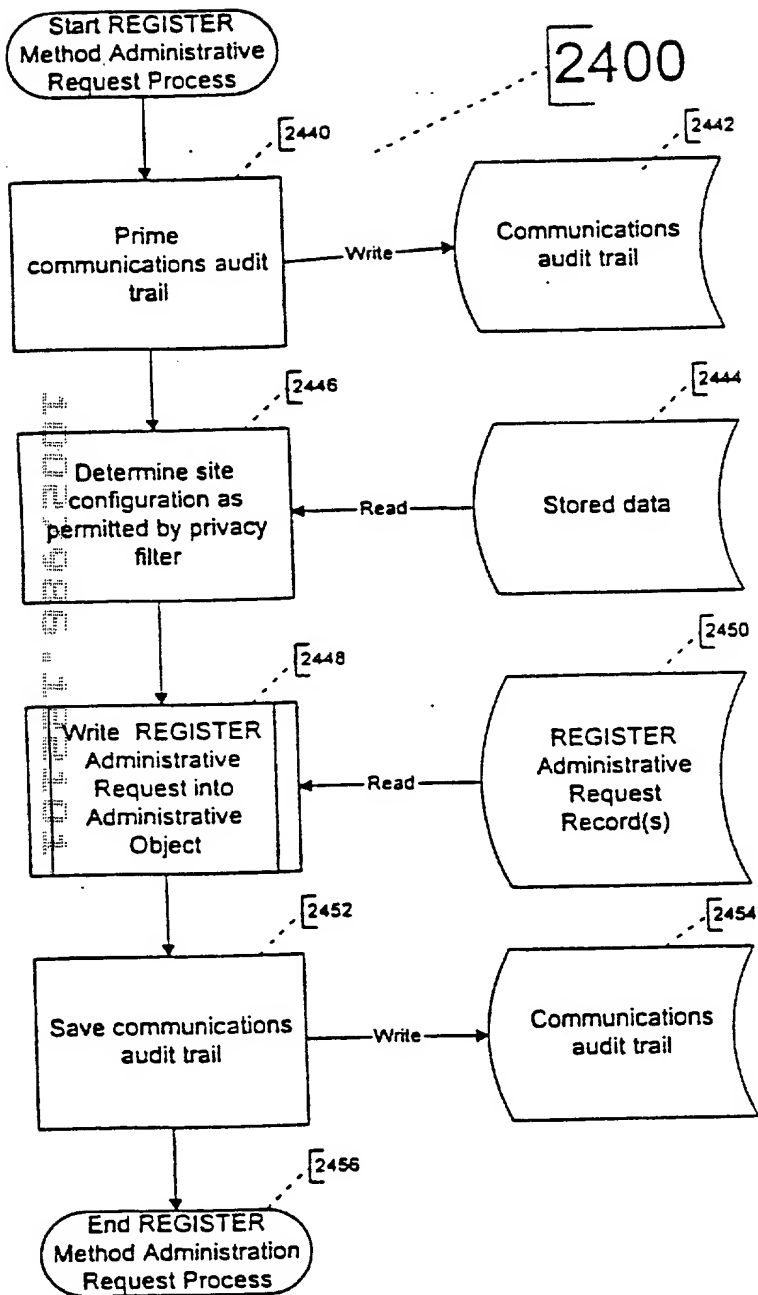


Figure 43b

REGISTER Method Administrative Response Process Flow

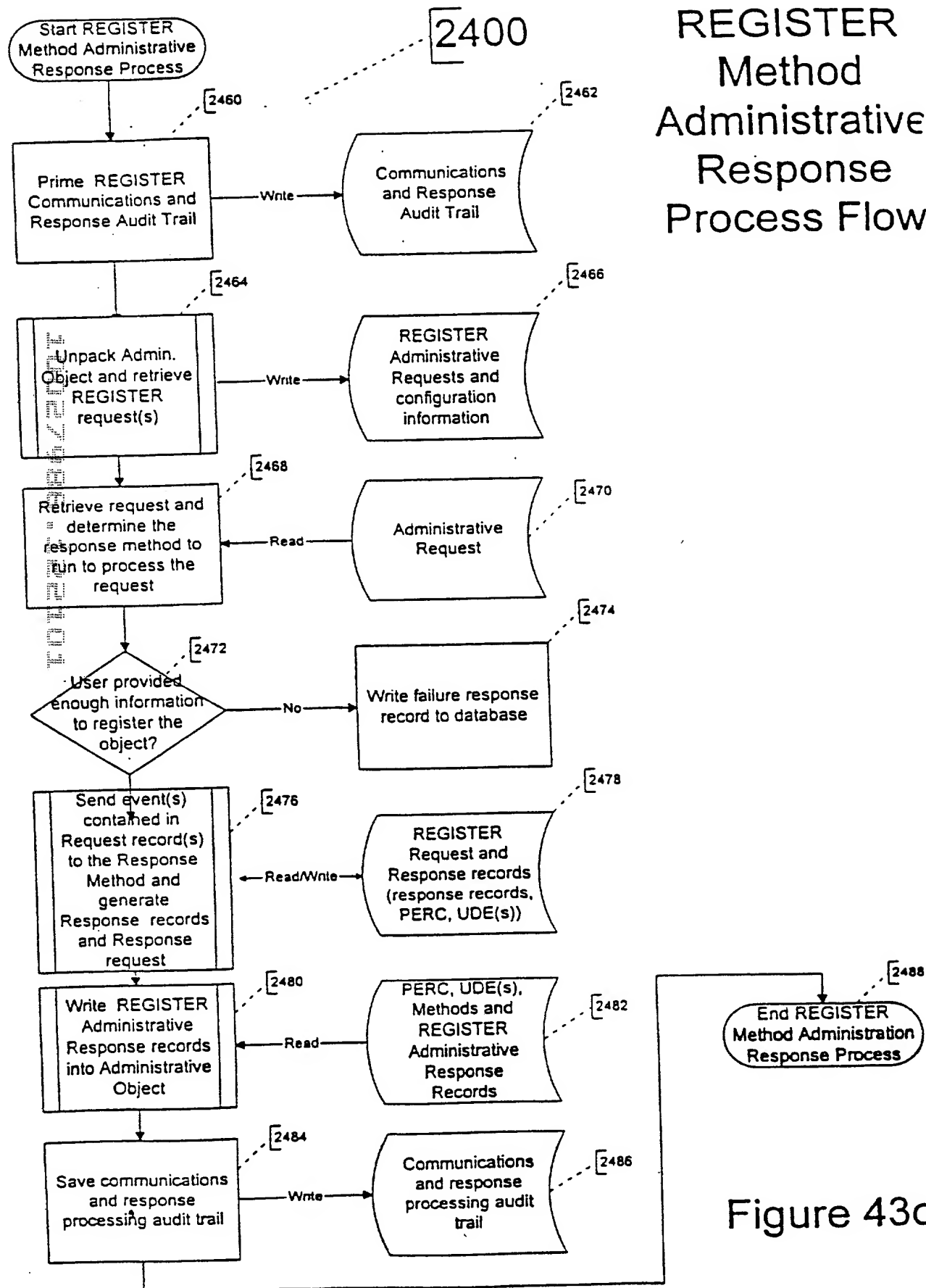


Figure 43c

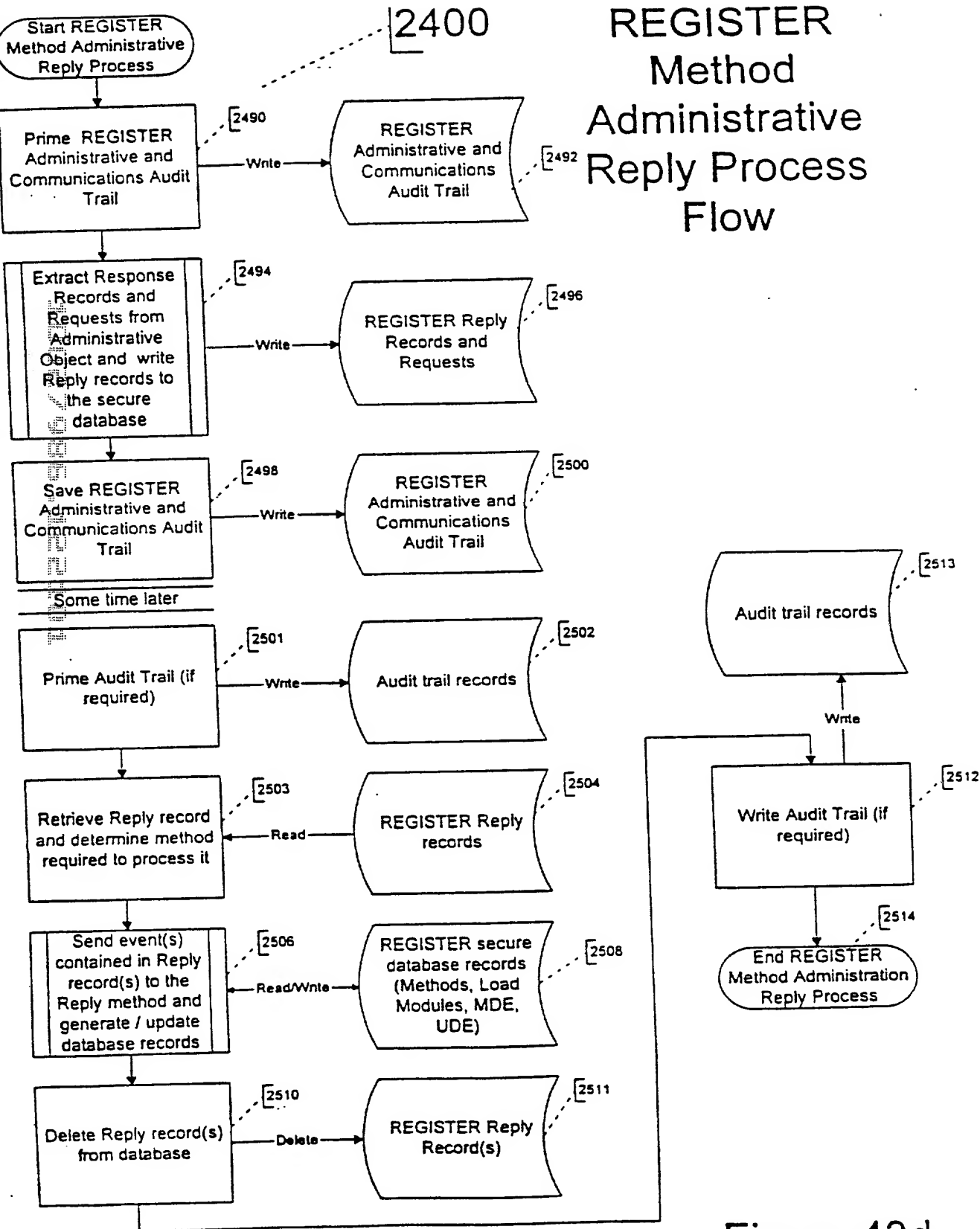


Figure 43d

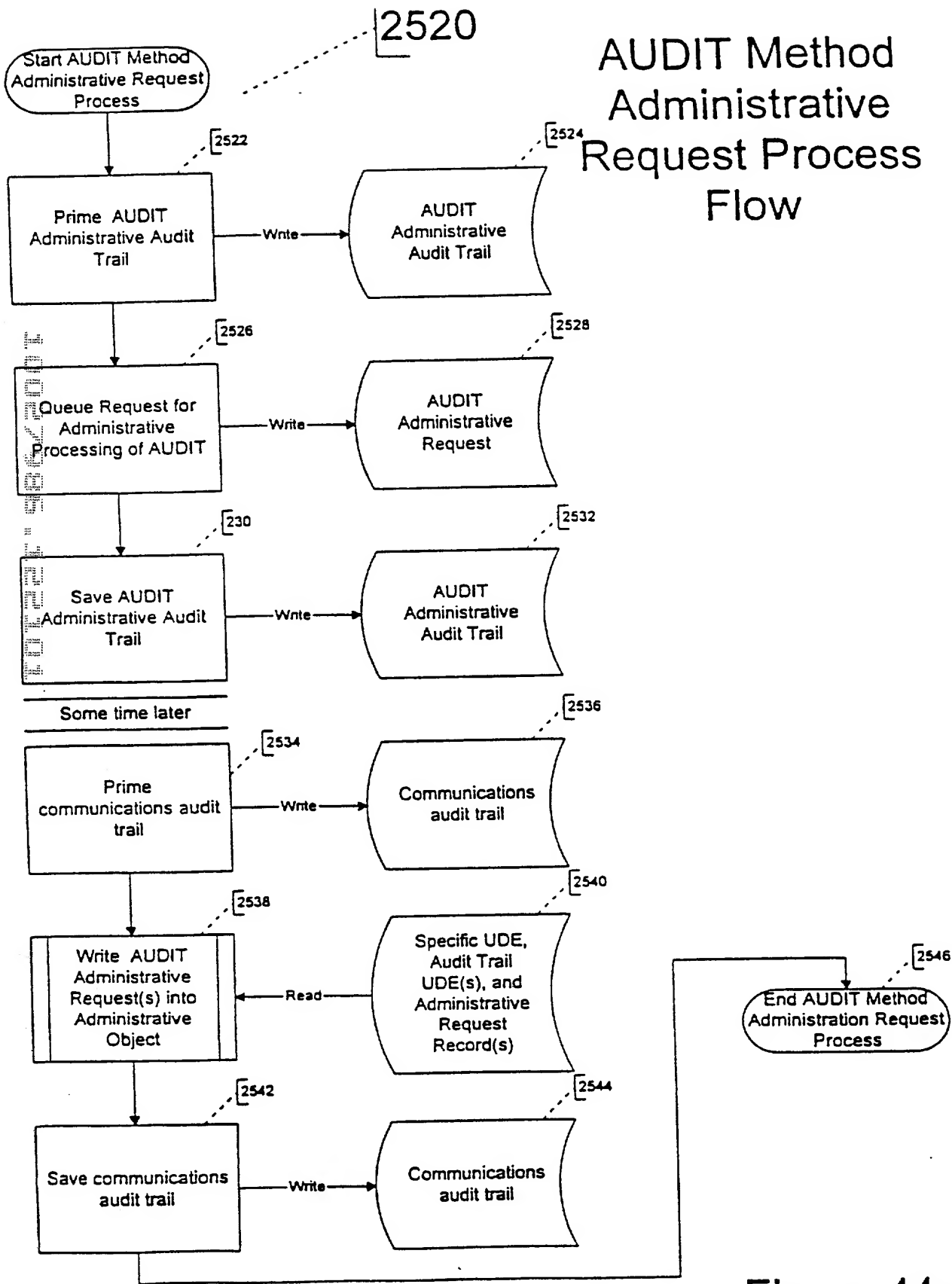


Figure 44a

AUDIT Method Administrative Response Process Flow

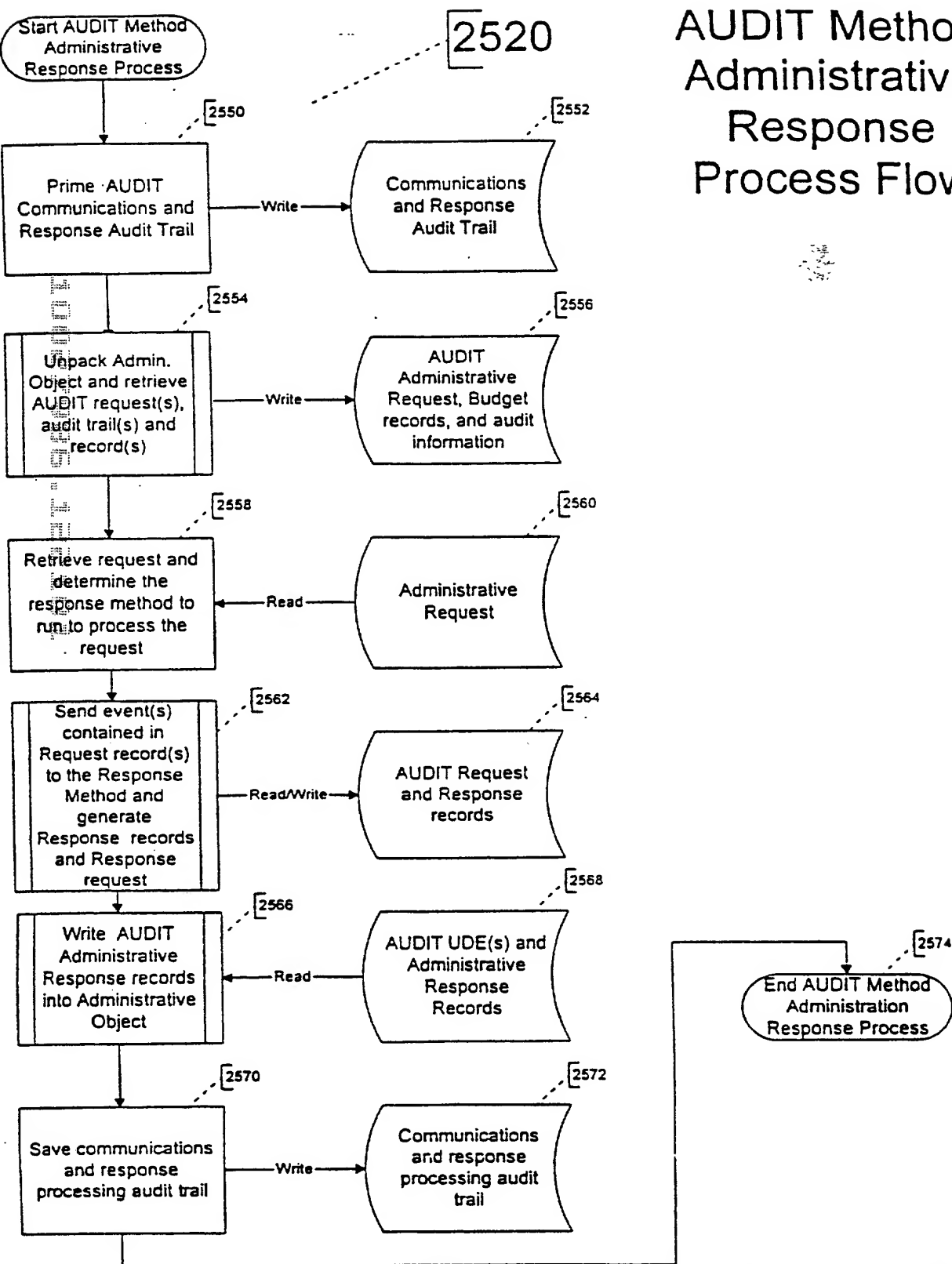


Figure 44b

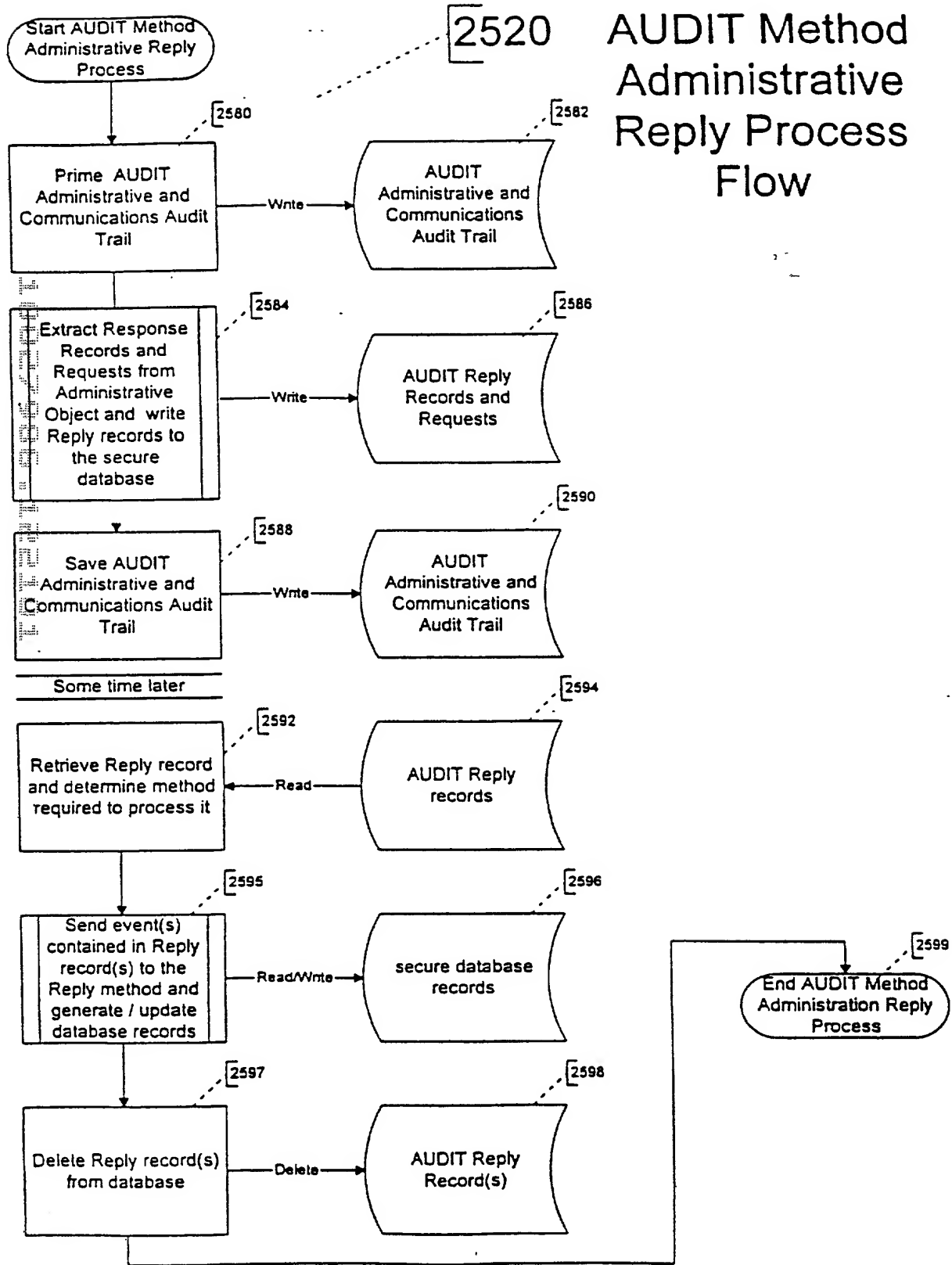


Figure 44c

FIG. 45

FOI 221 985/2001

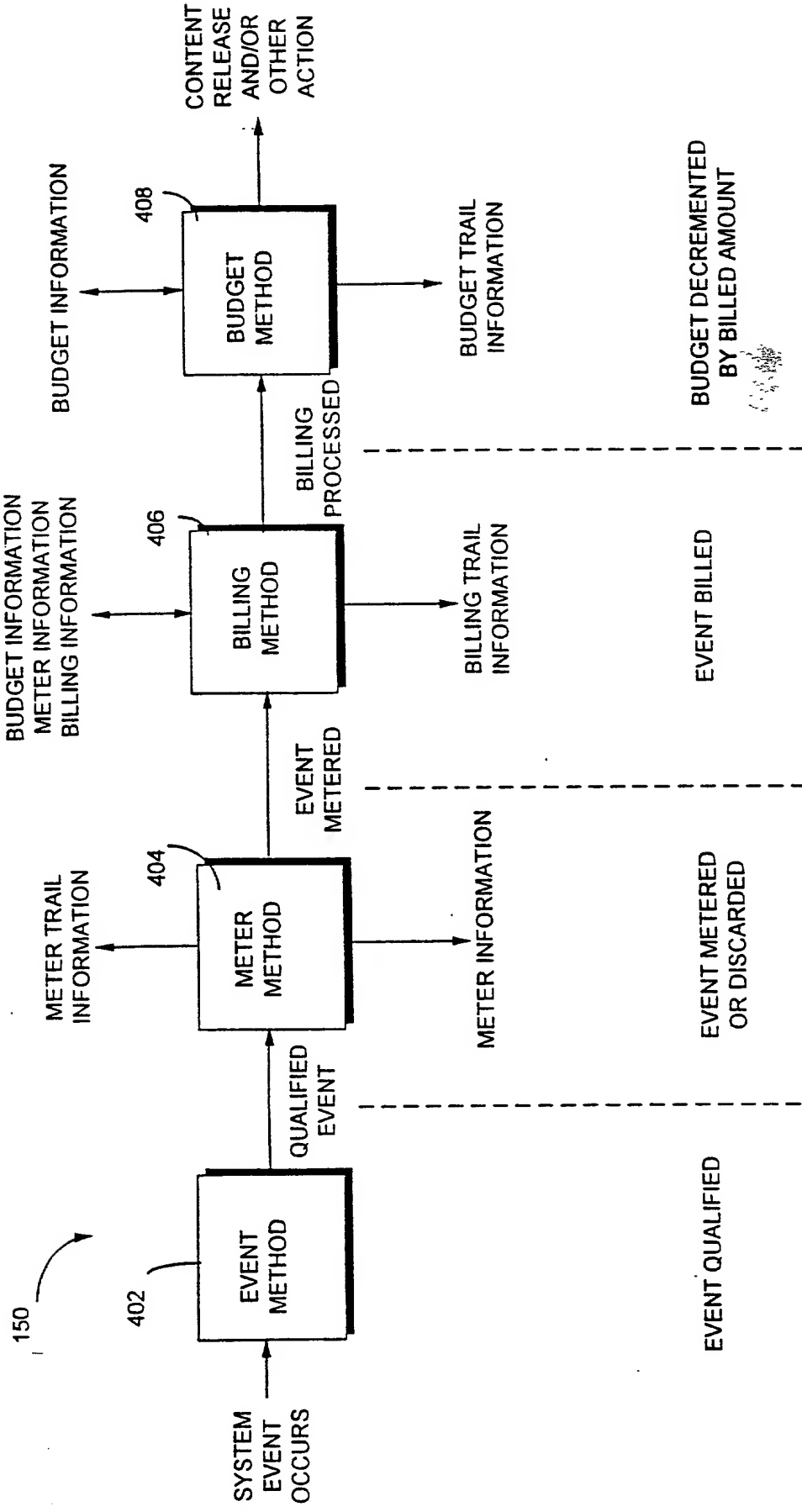


FIG. 46

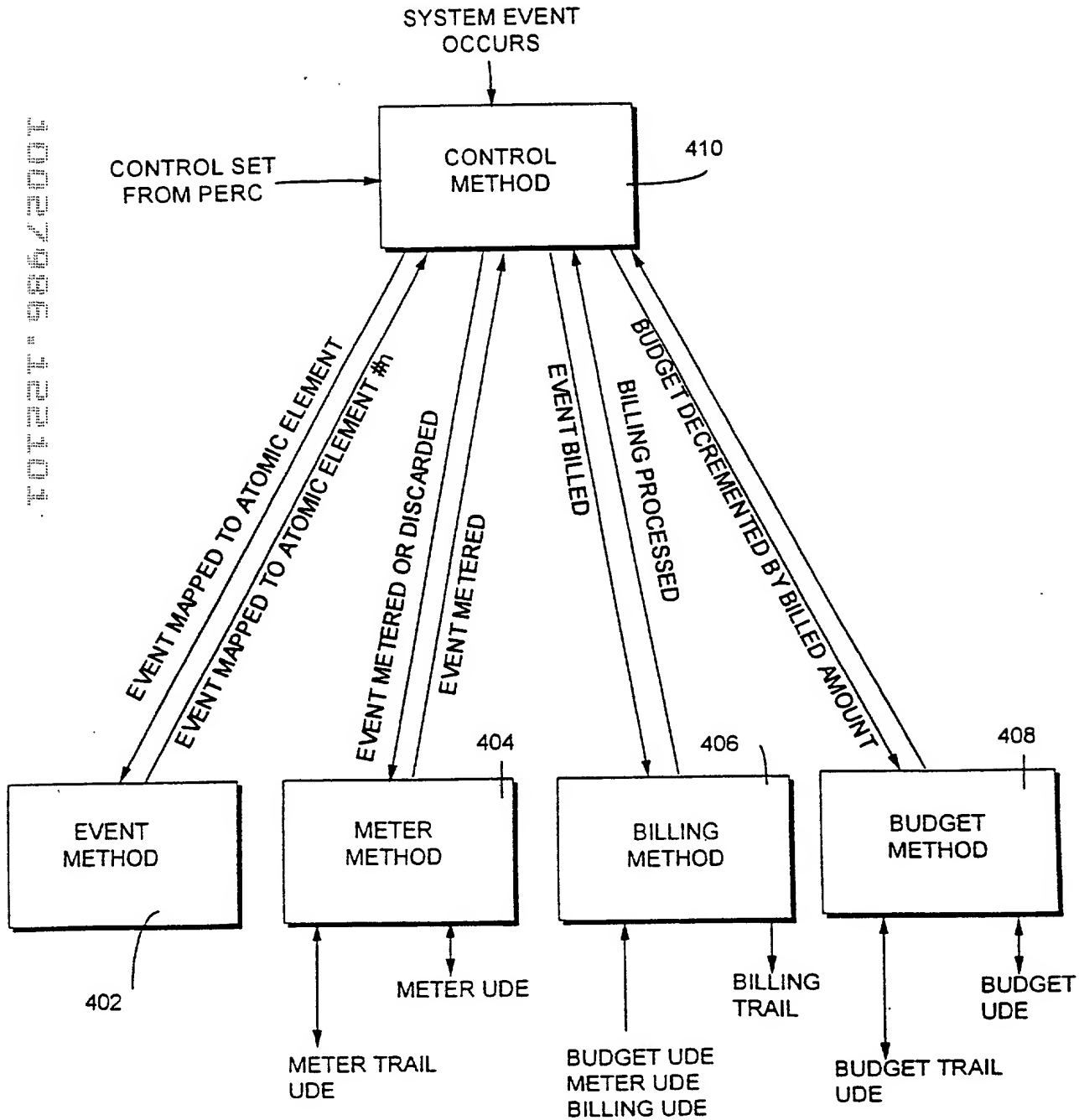
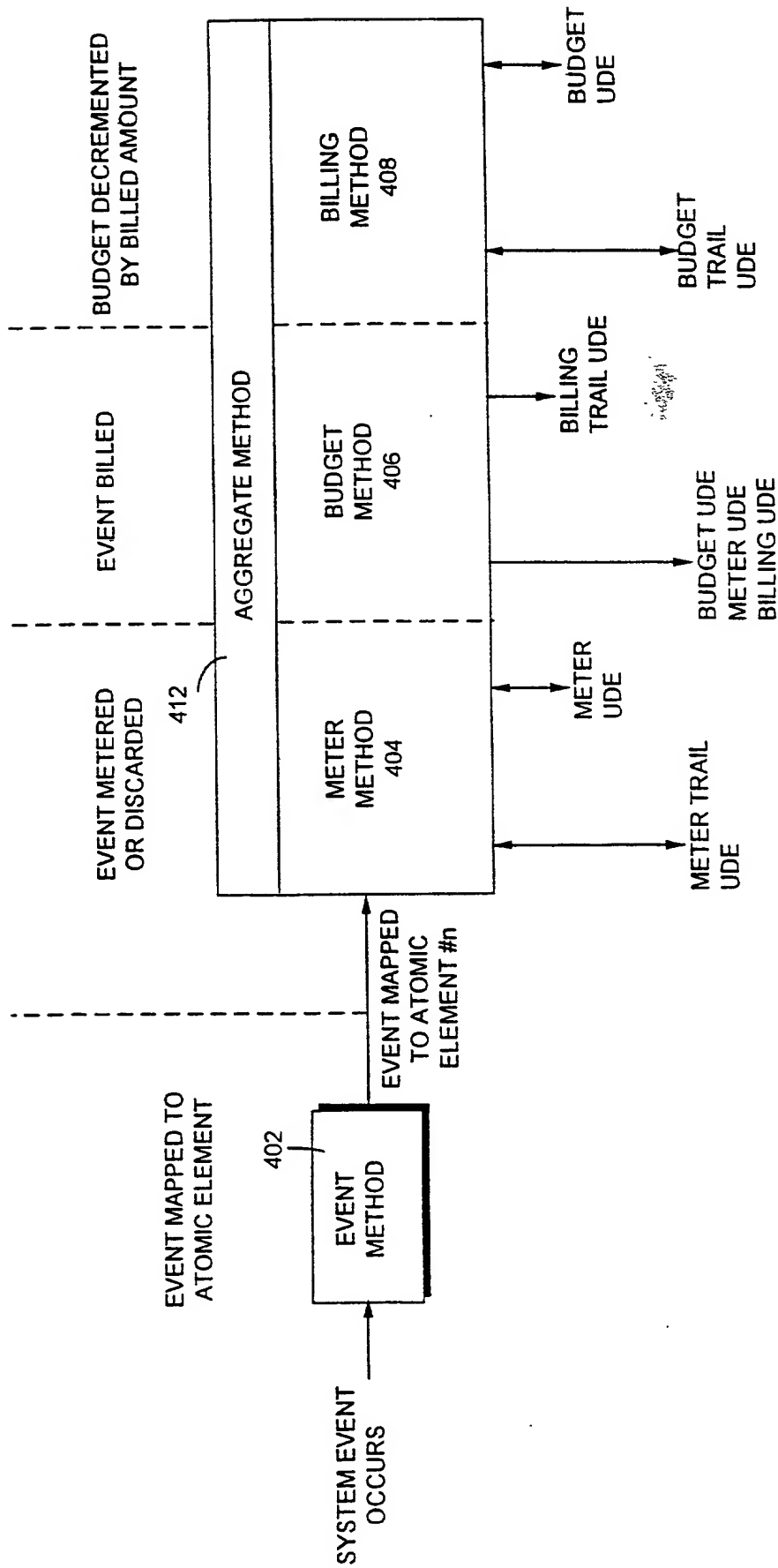
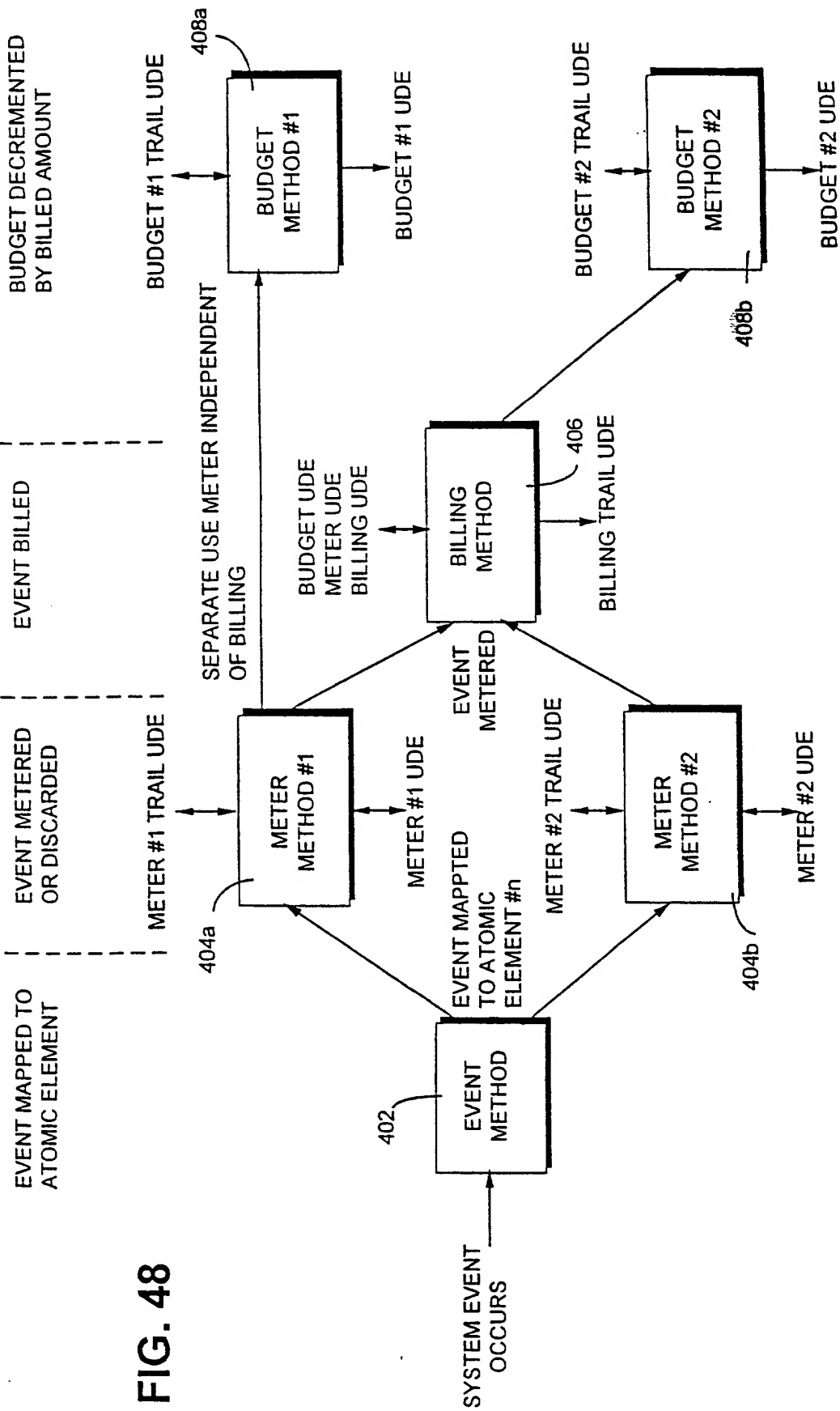


FIG. 47





OPEN Method Use Process Flow

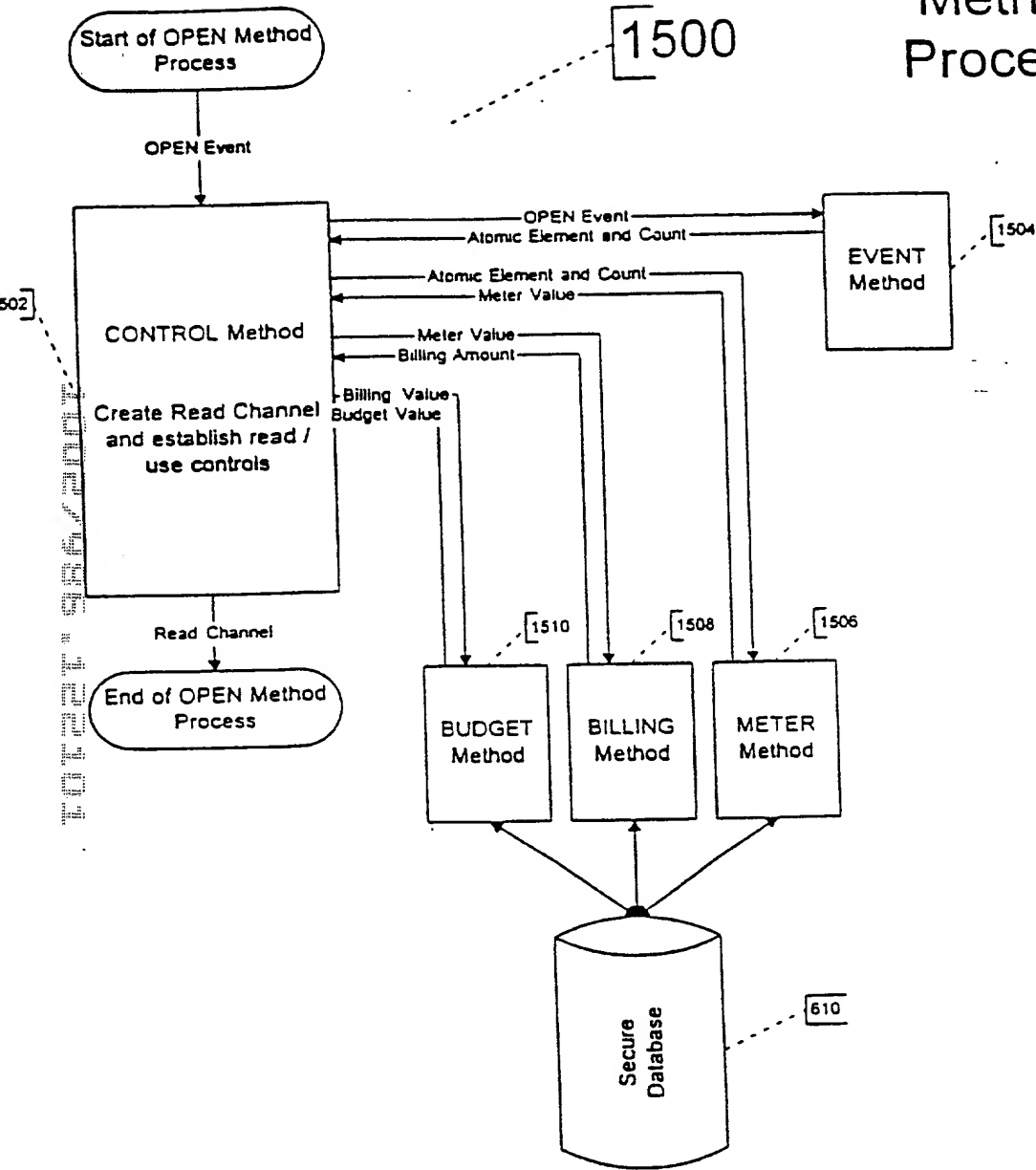


Figure 49

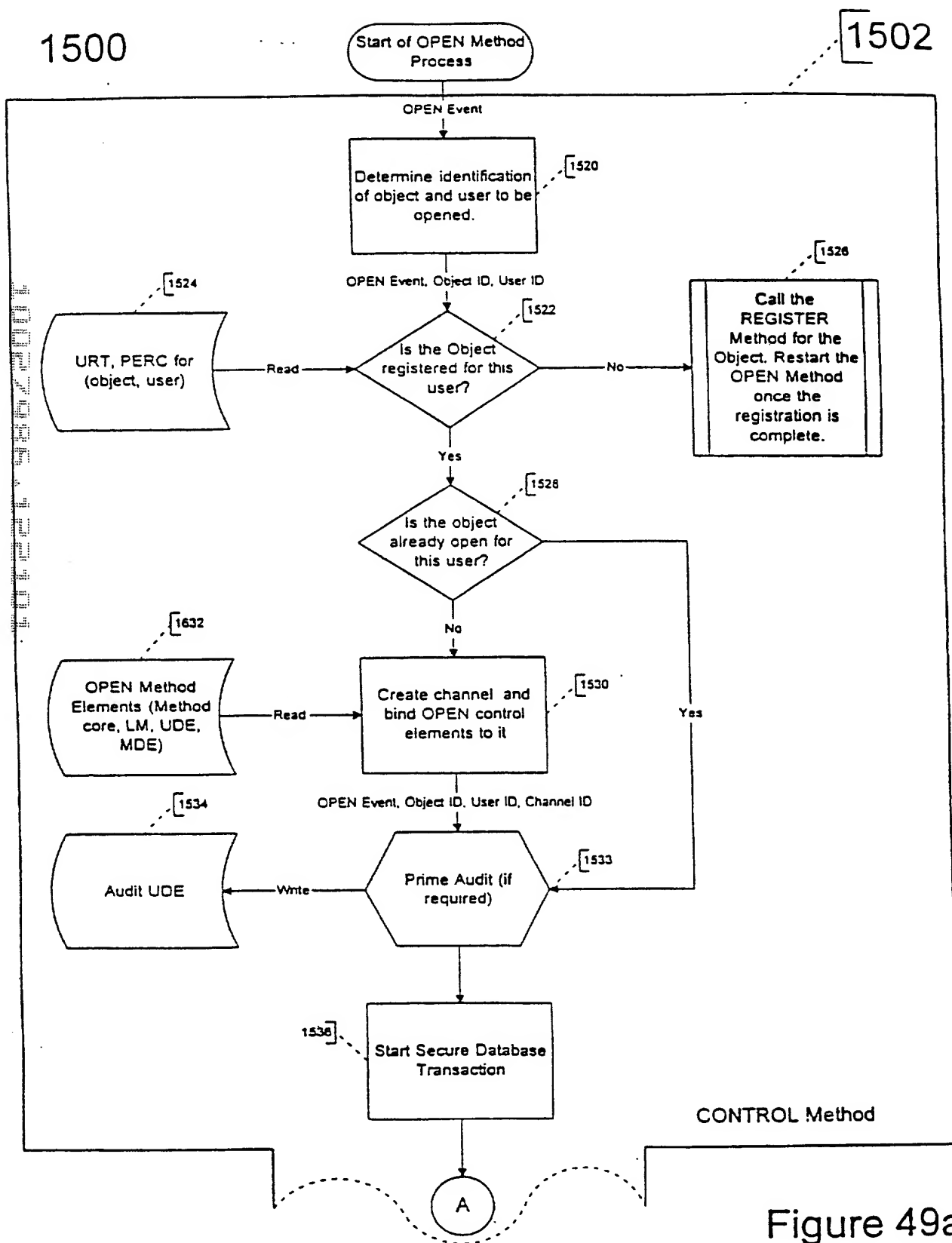


Figure 49a

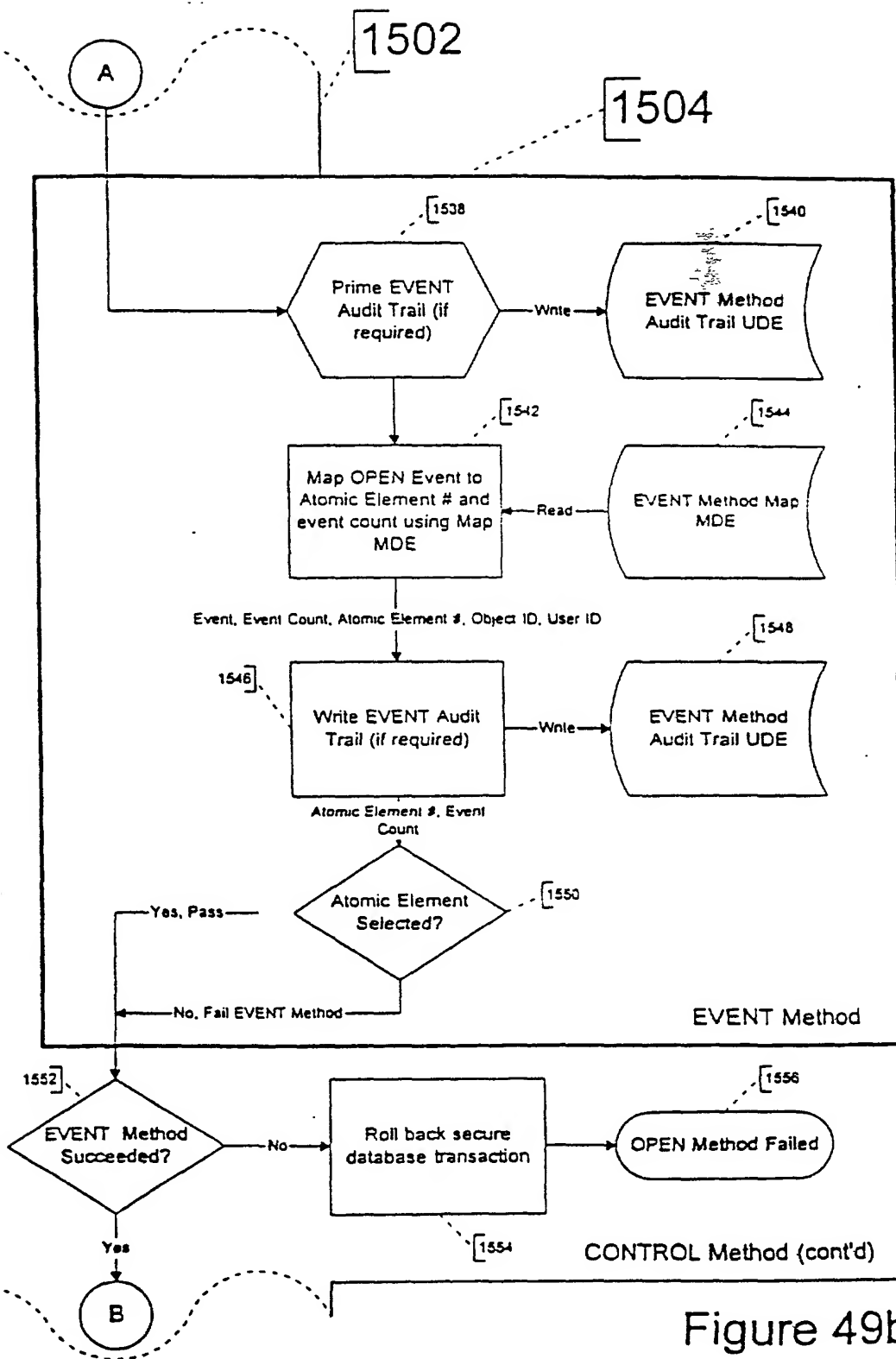


Figure 49b

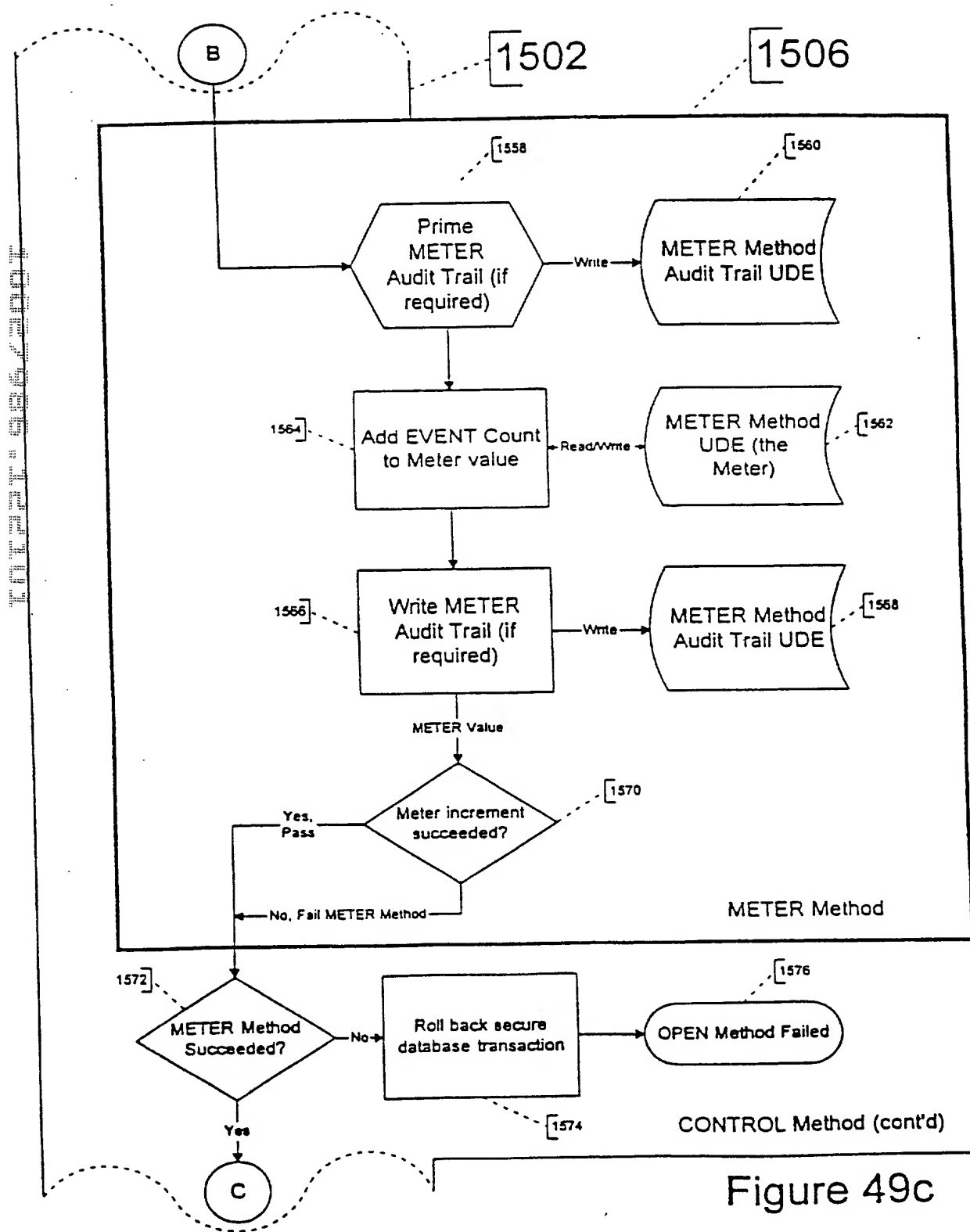


Figure 49c

10027986 12210
"0222" 986/2001

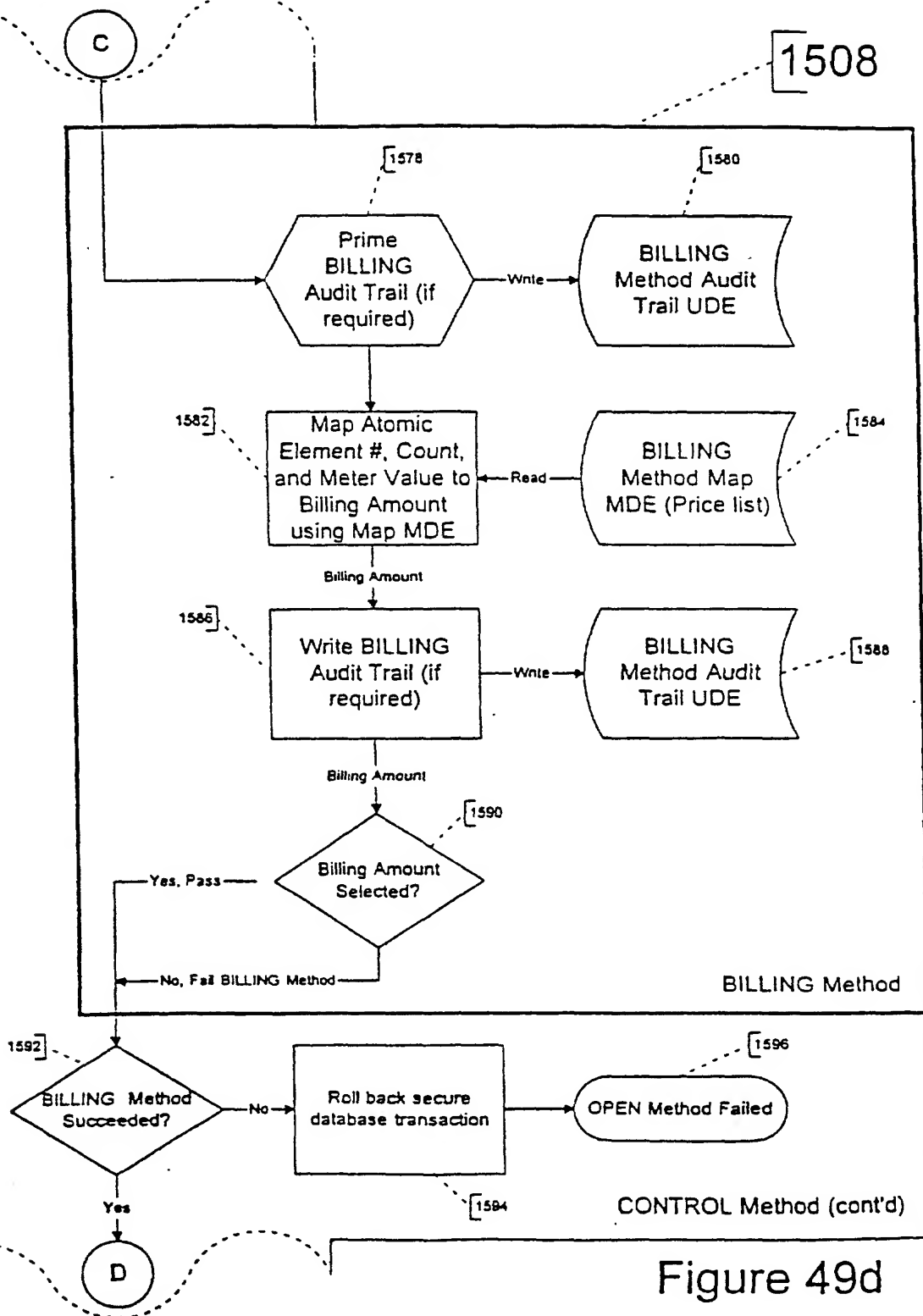


Figure 49d

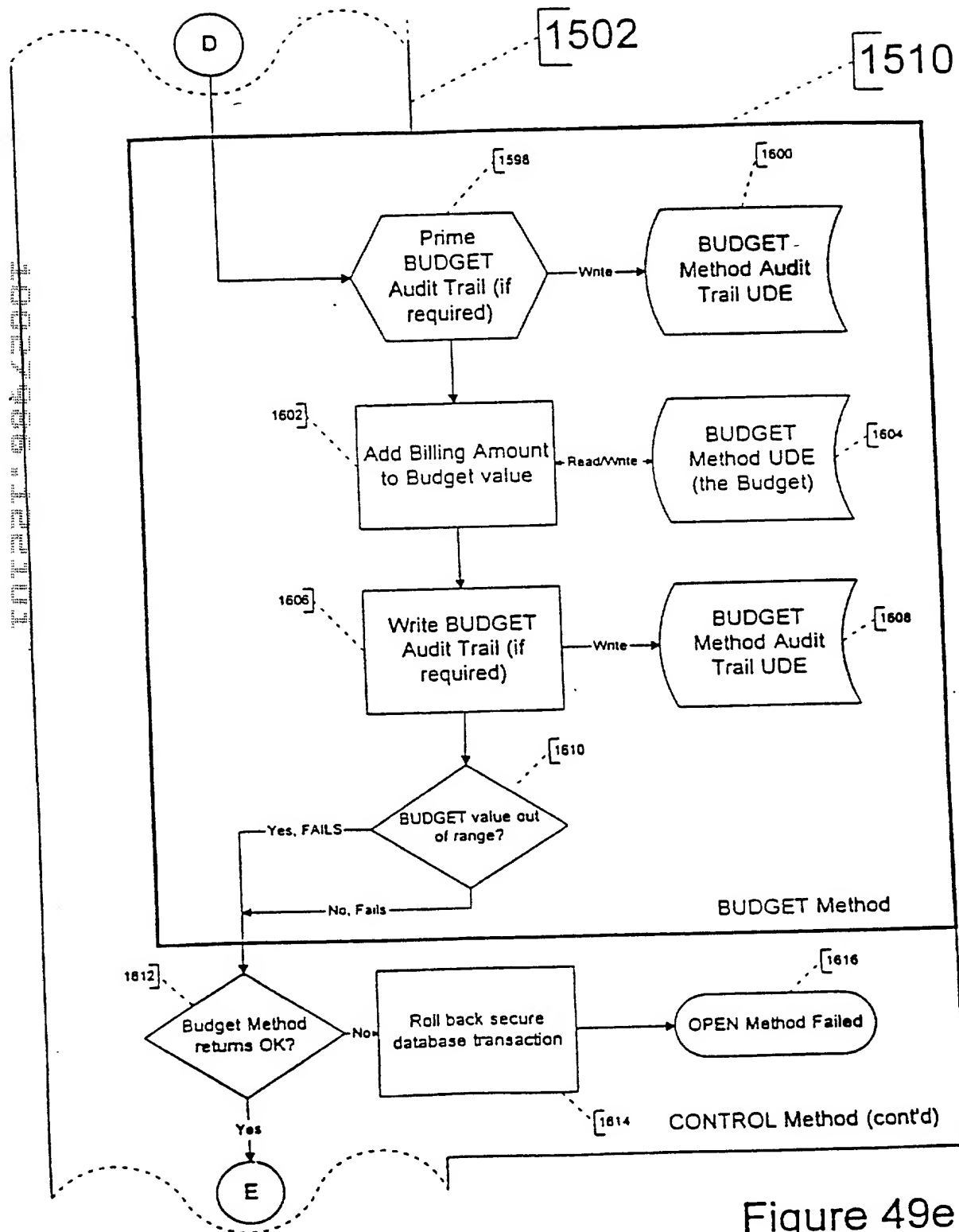


Figure 49e

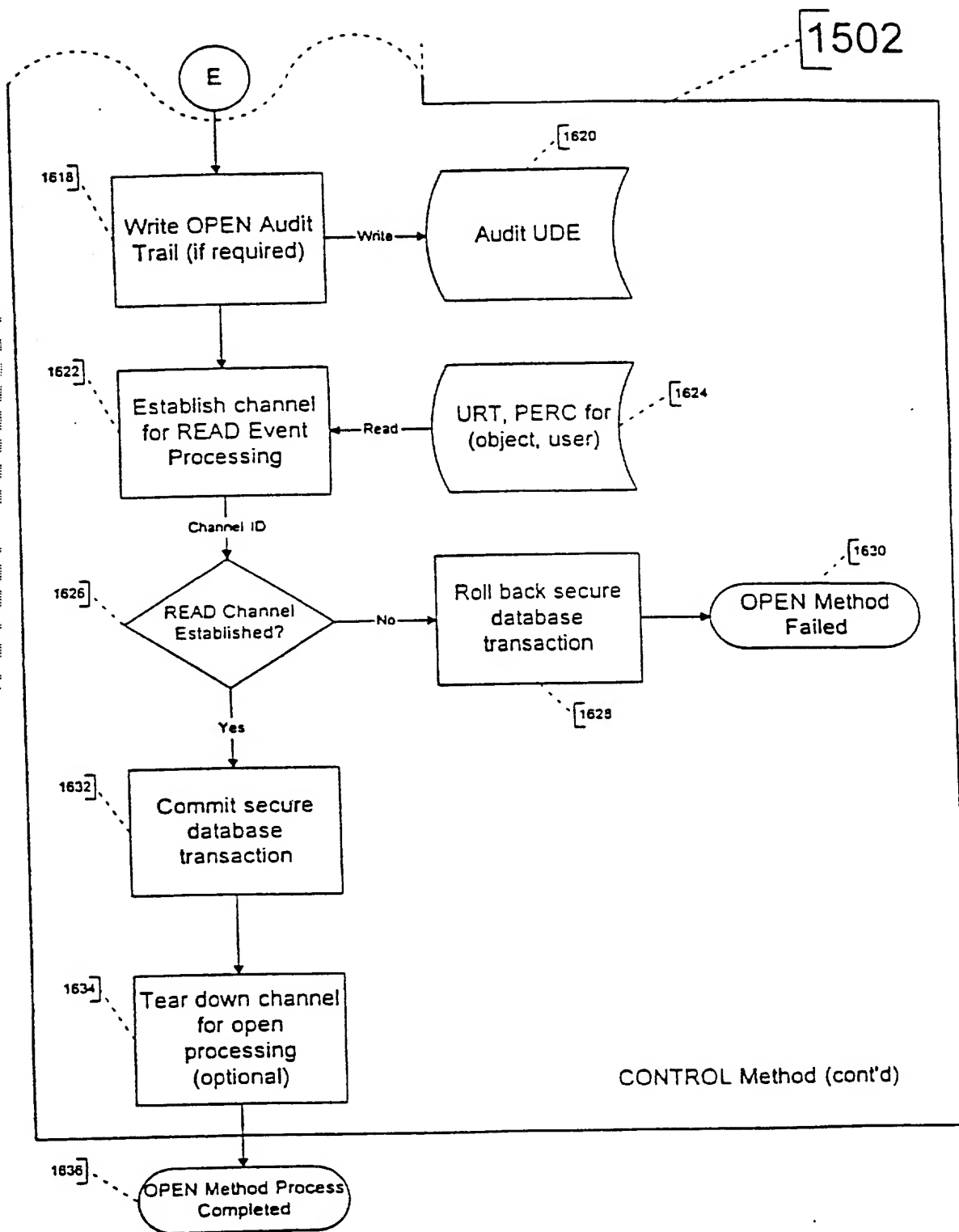


Figure 49f

READ Method Use Process Flow

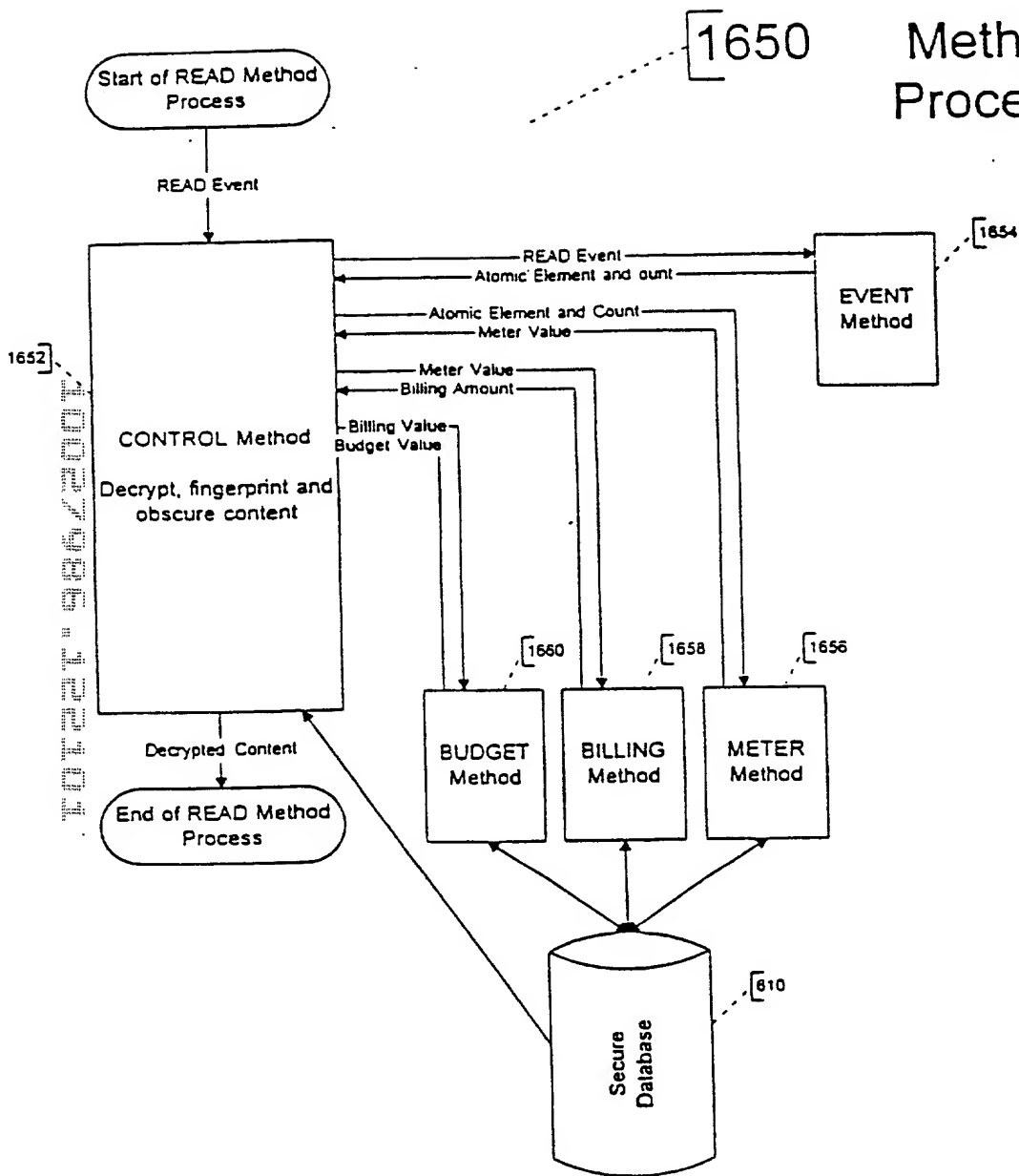


Figure 50

1650

10027986 12210

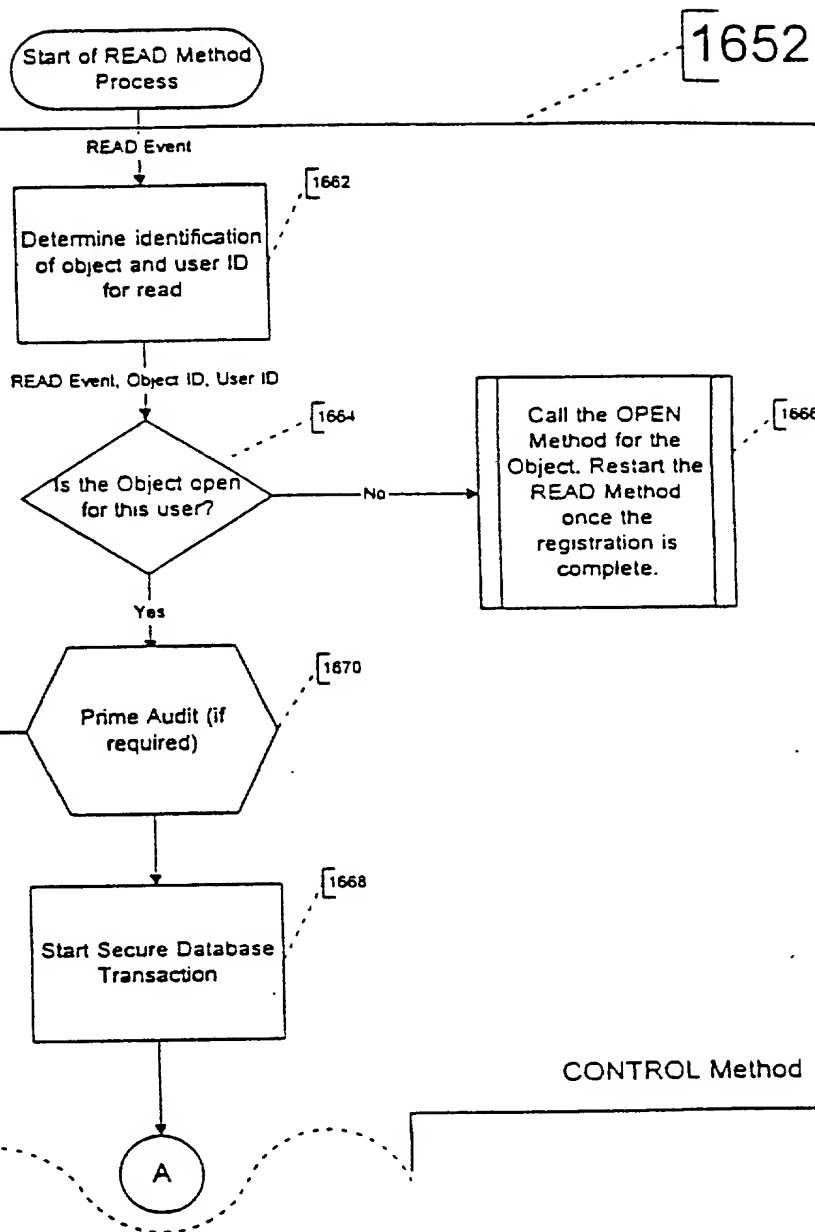


Figure 50a

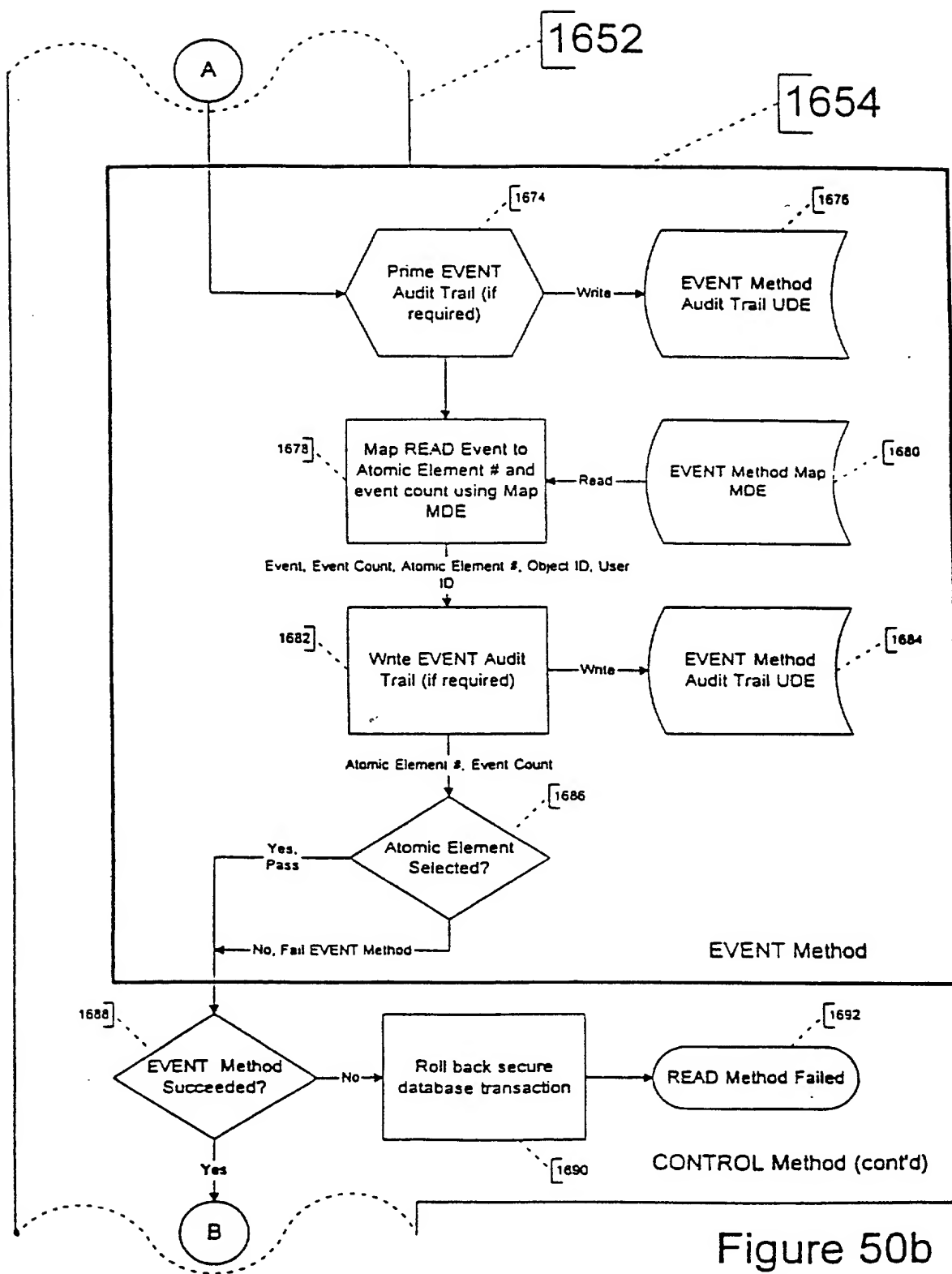


Figure 50b

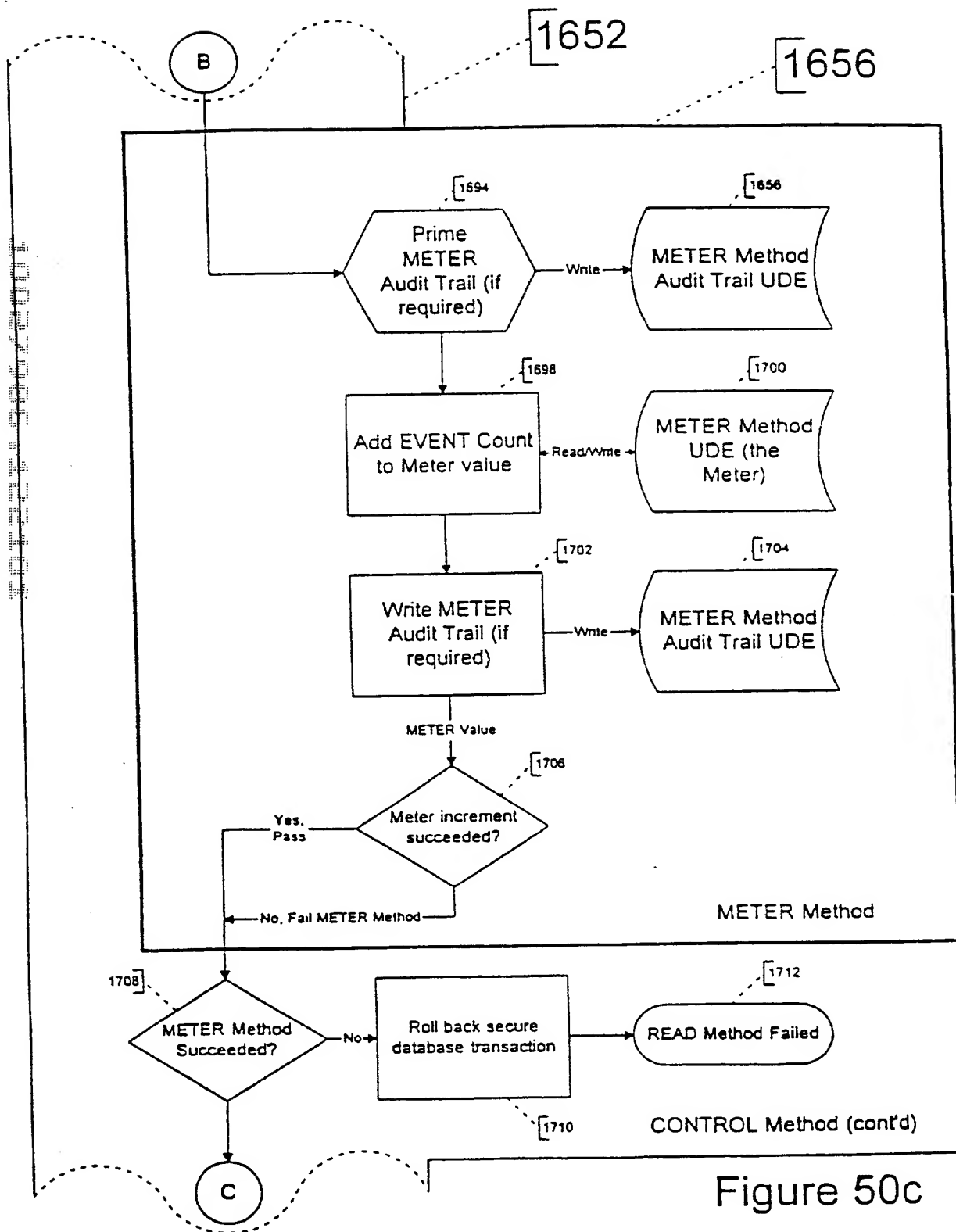


Figure 50c

10027986 "12310"

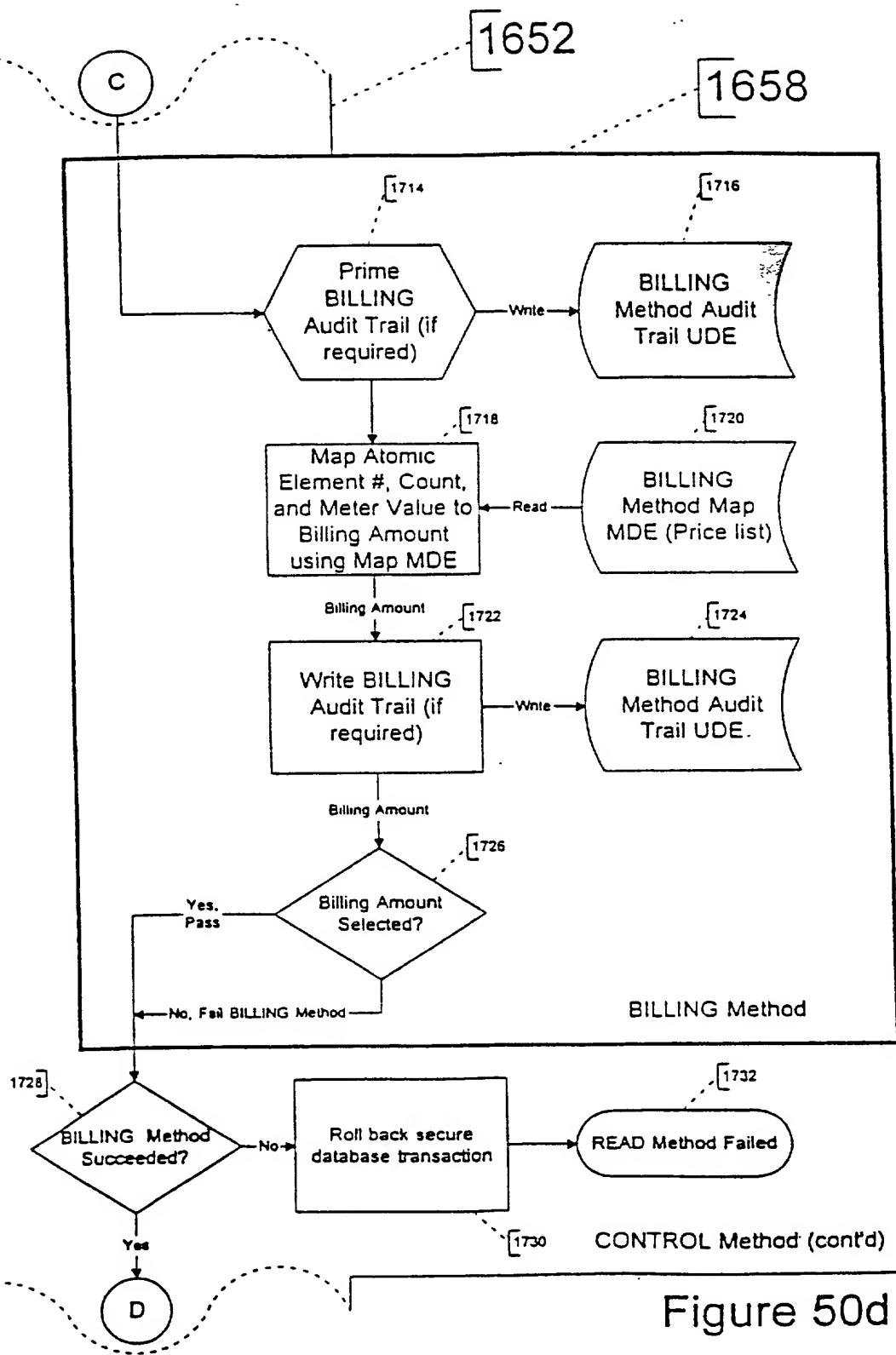


Figure 50d

10027986 122107

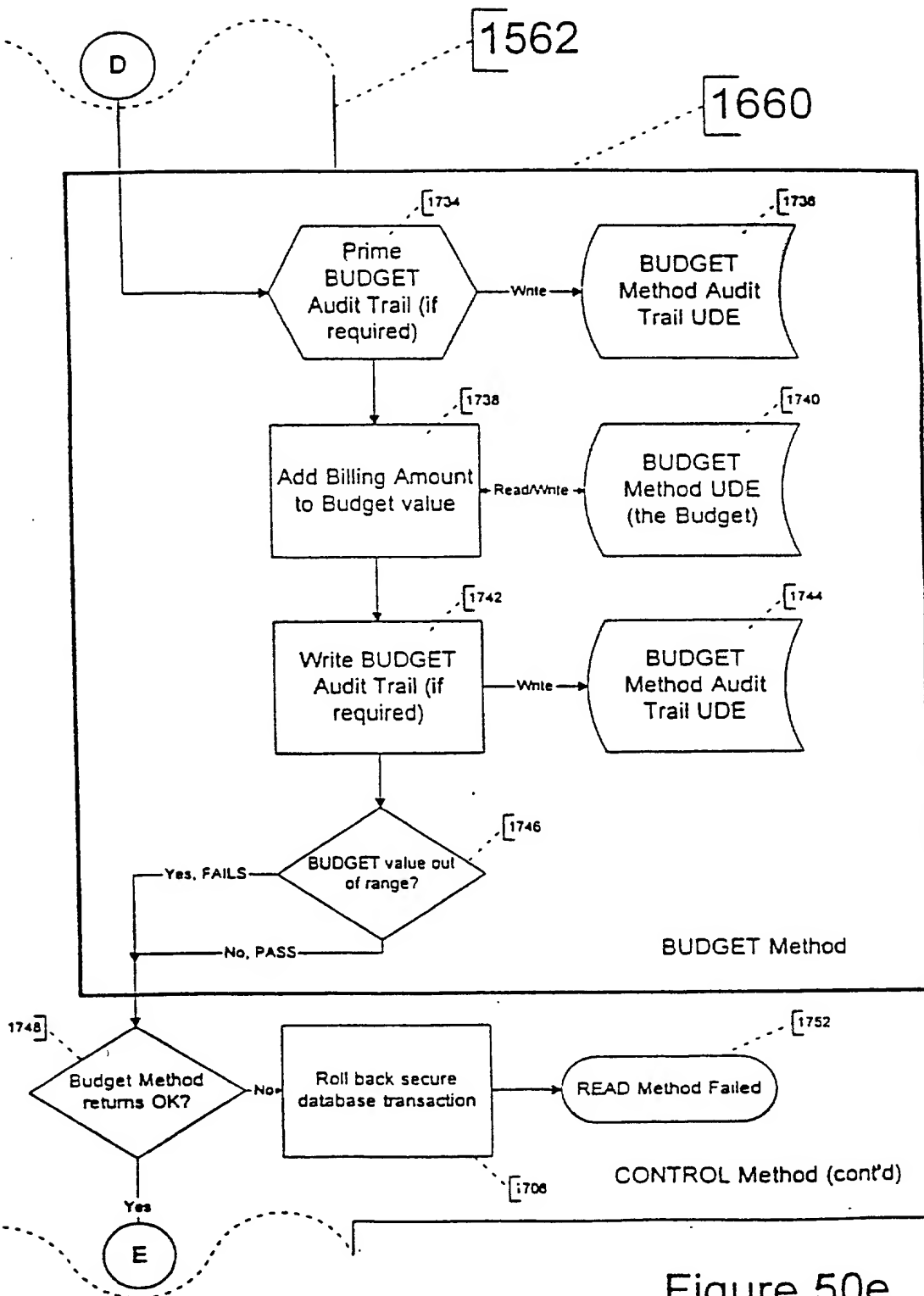
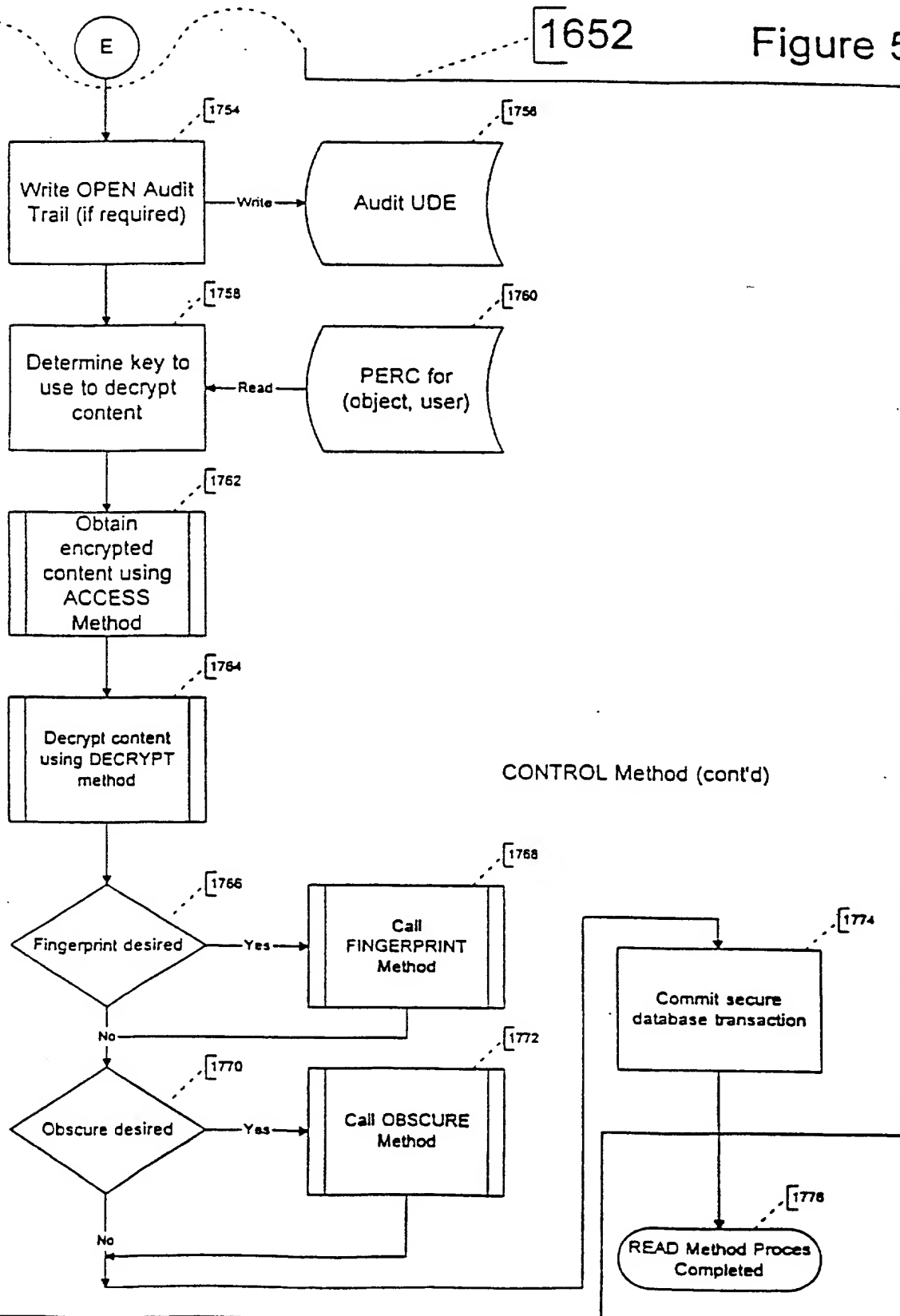


Figure 50e

10027986-122101

1652

Figure 50f



WRITE Method Use Process Flow

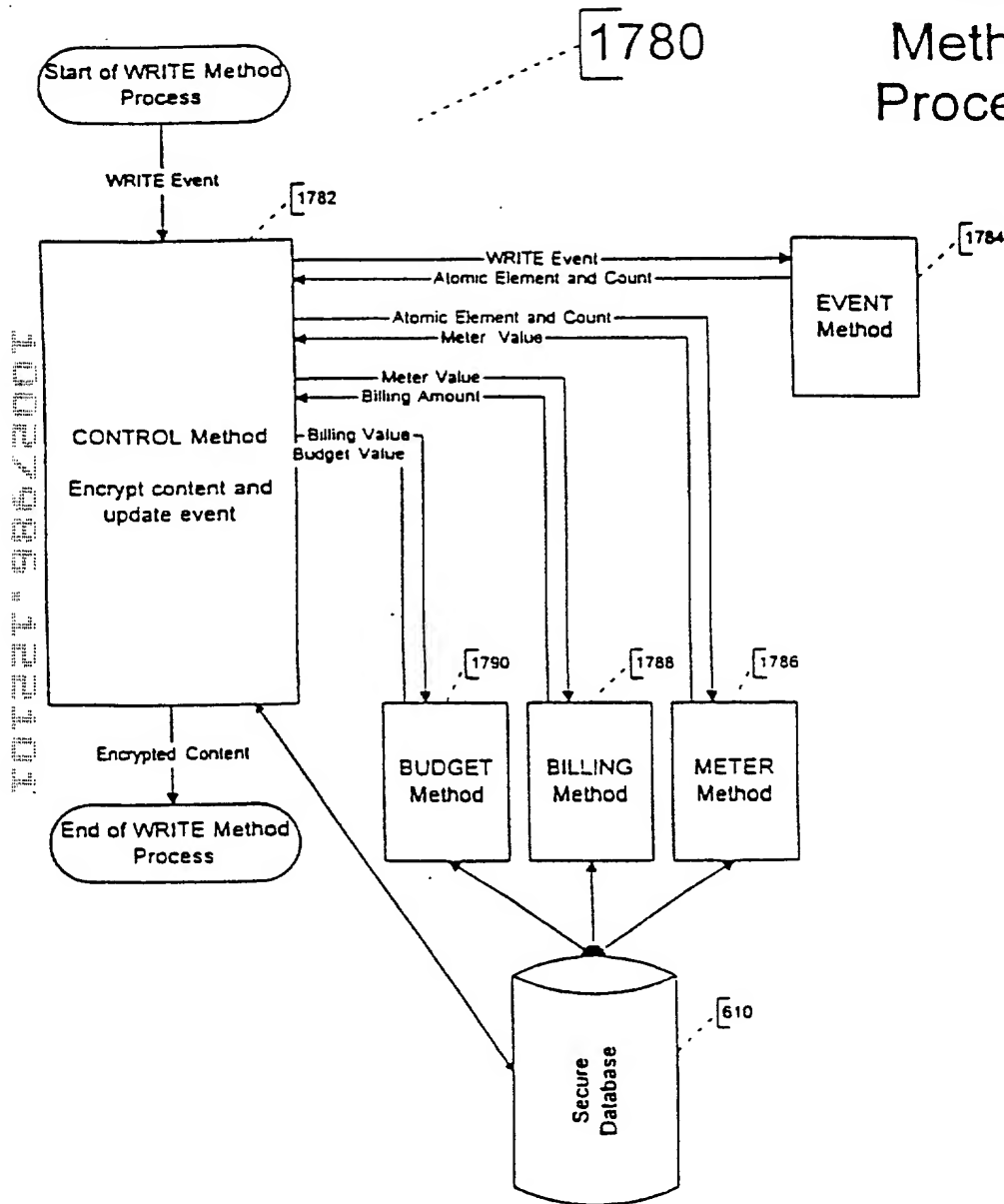


Figure 51

1780

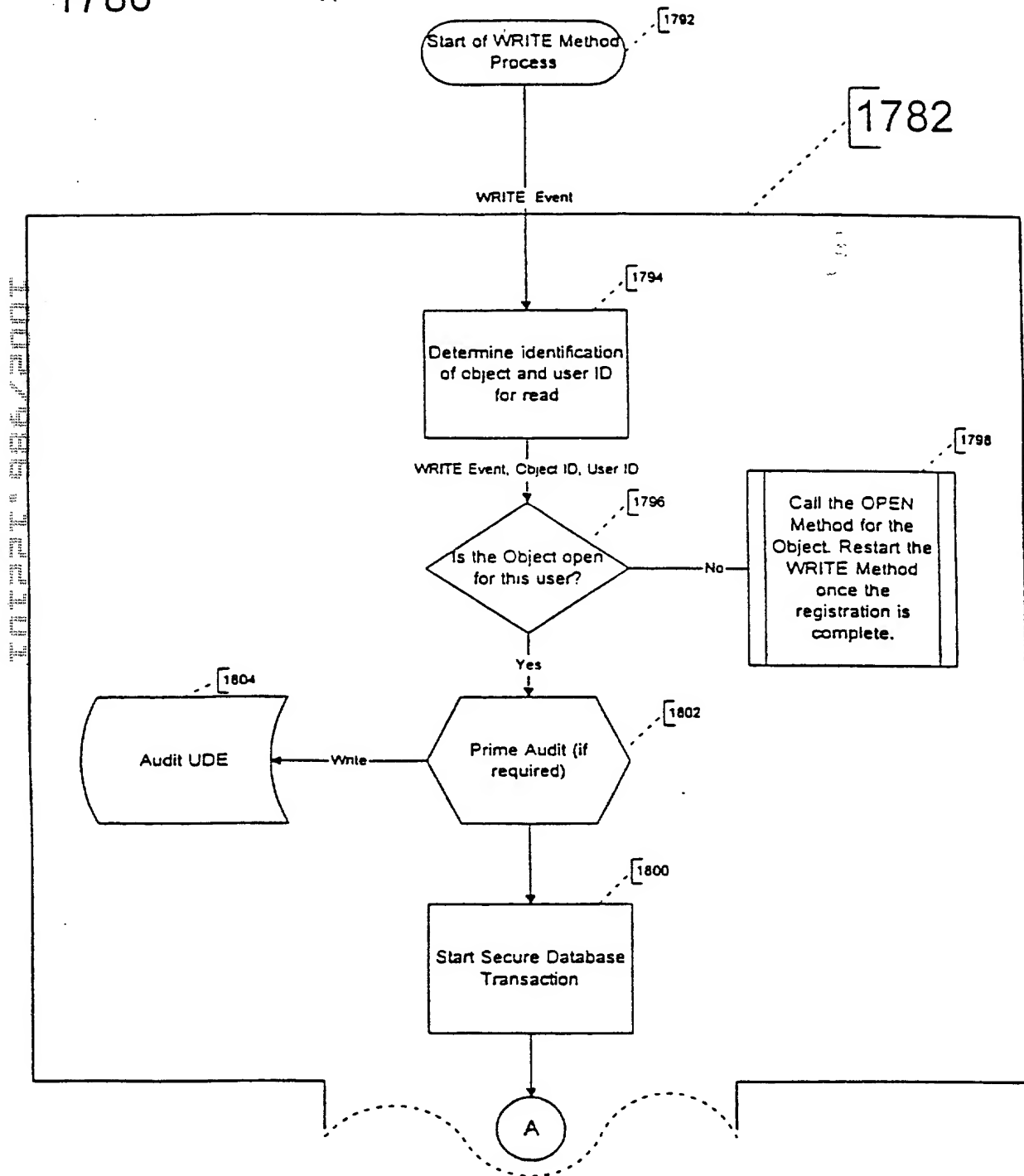


Figure 51a

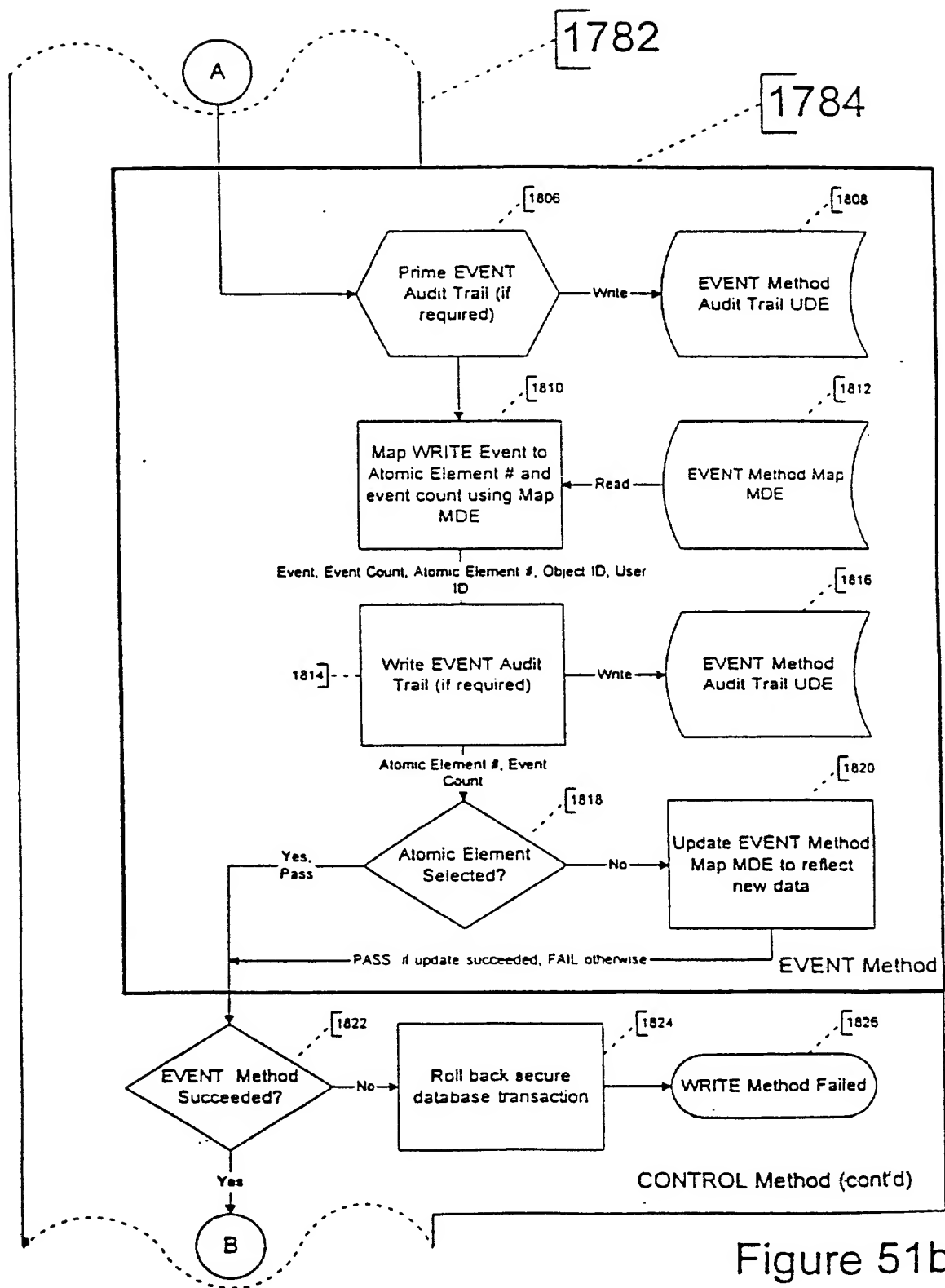


Figure 51b

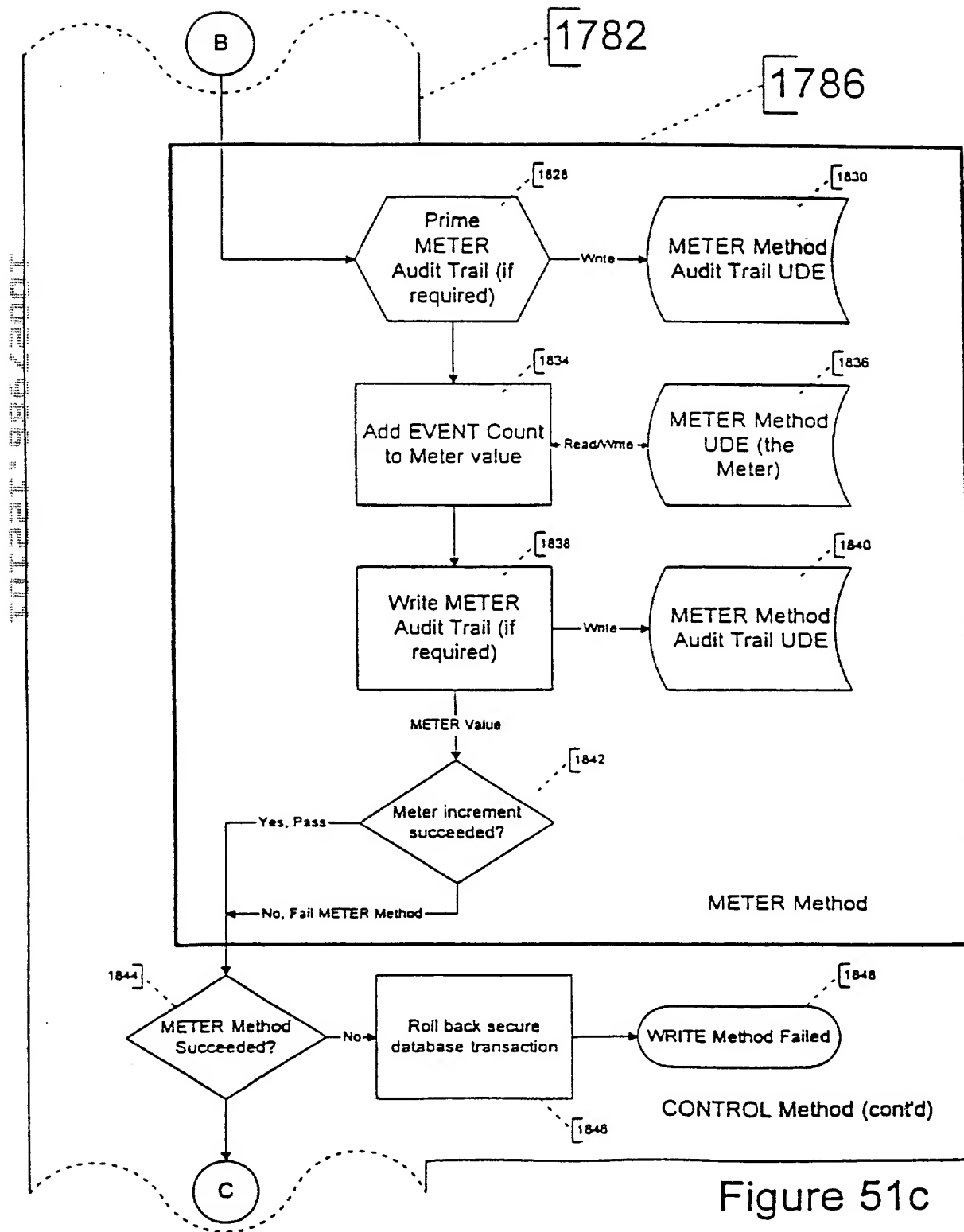


Figure 51c

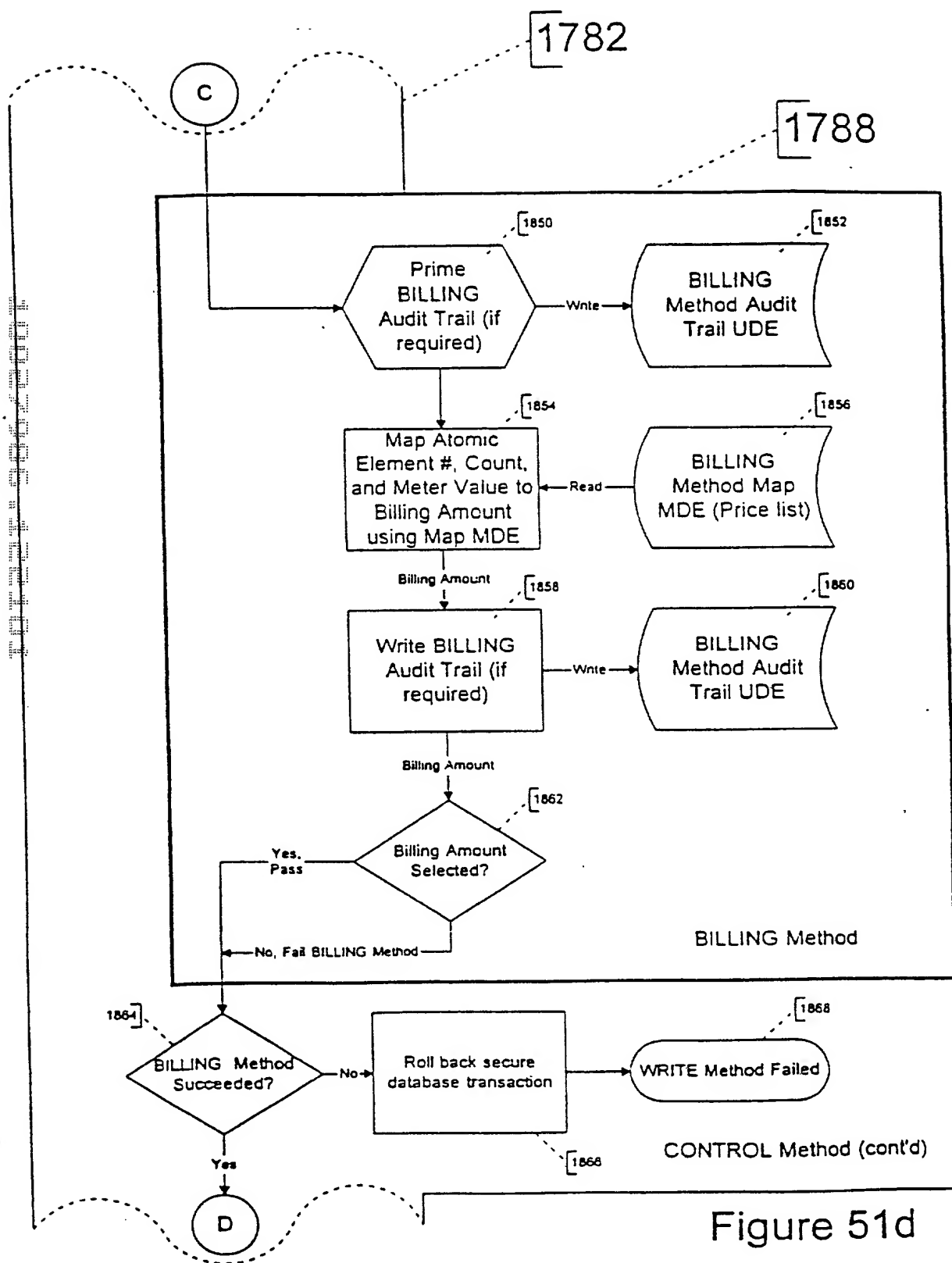


Figure 51d

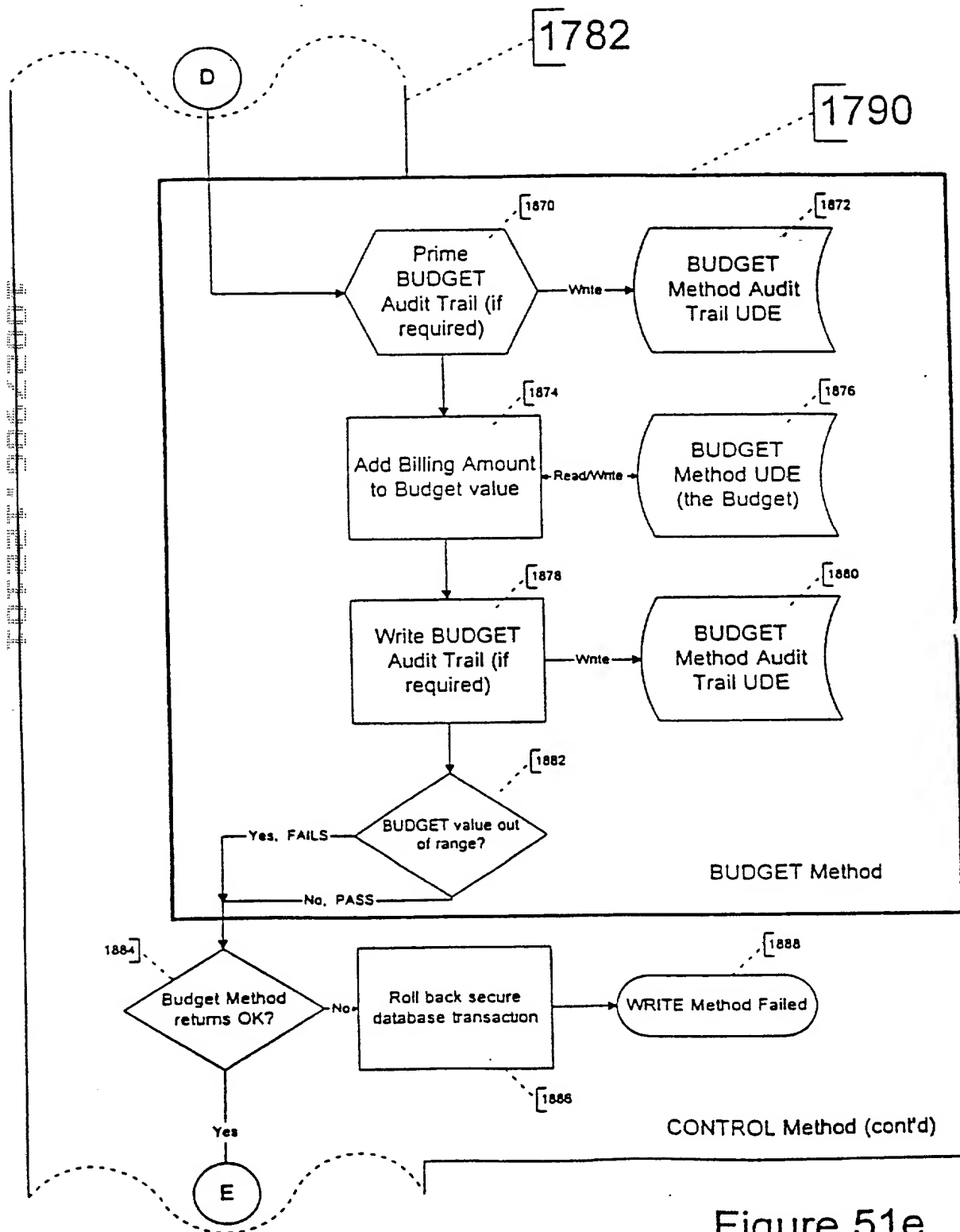


Figure 51e

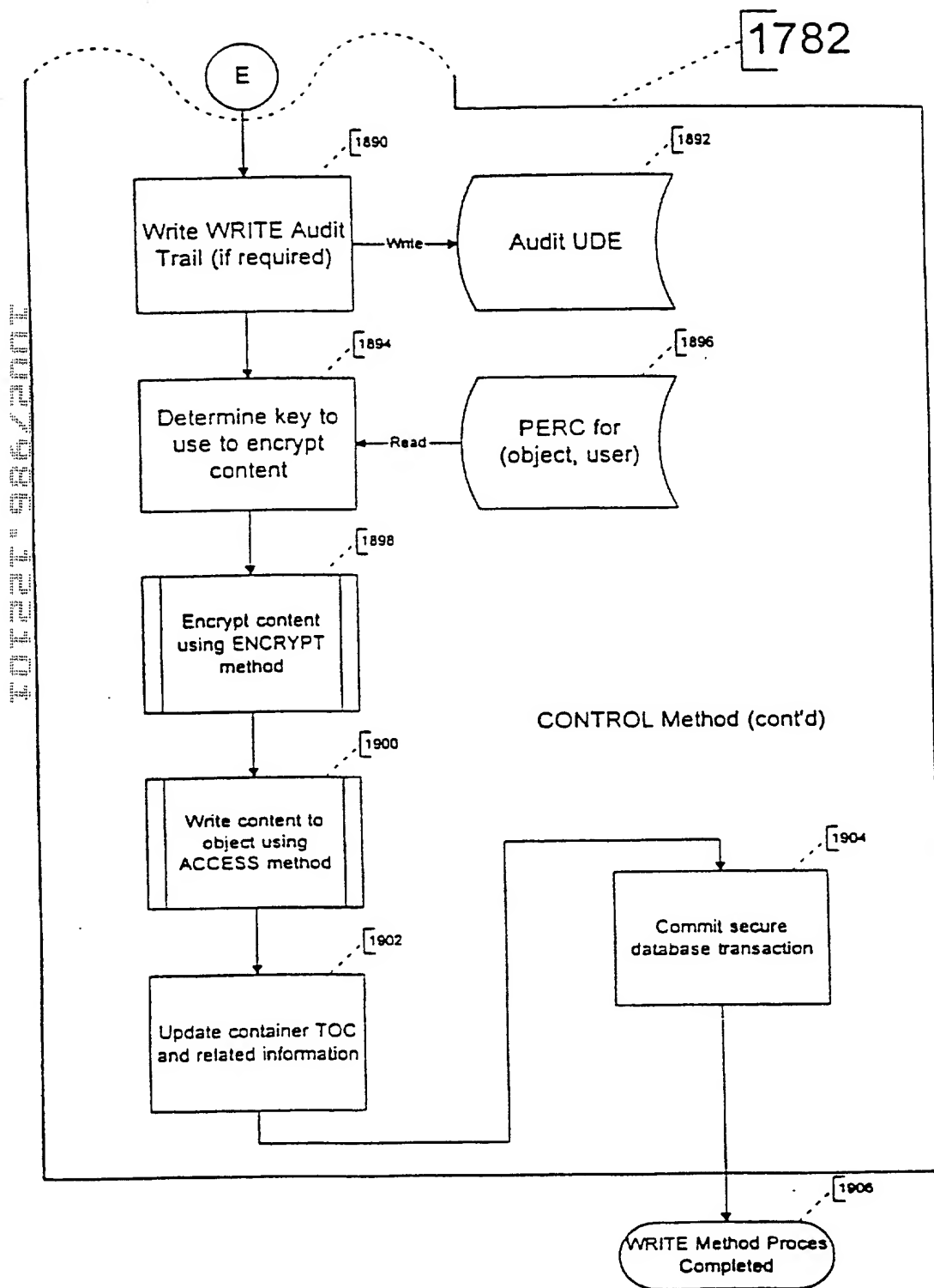
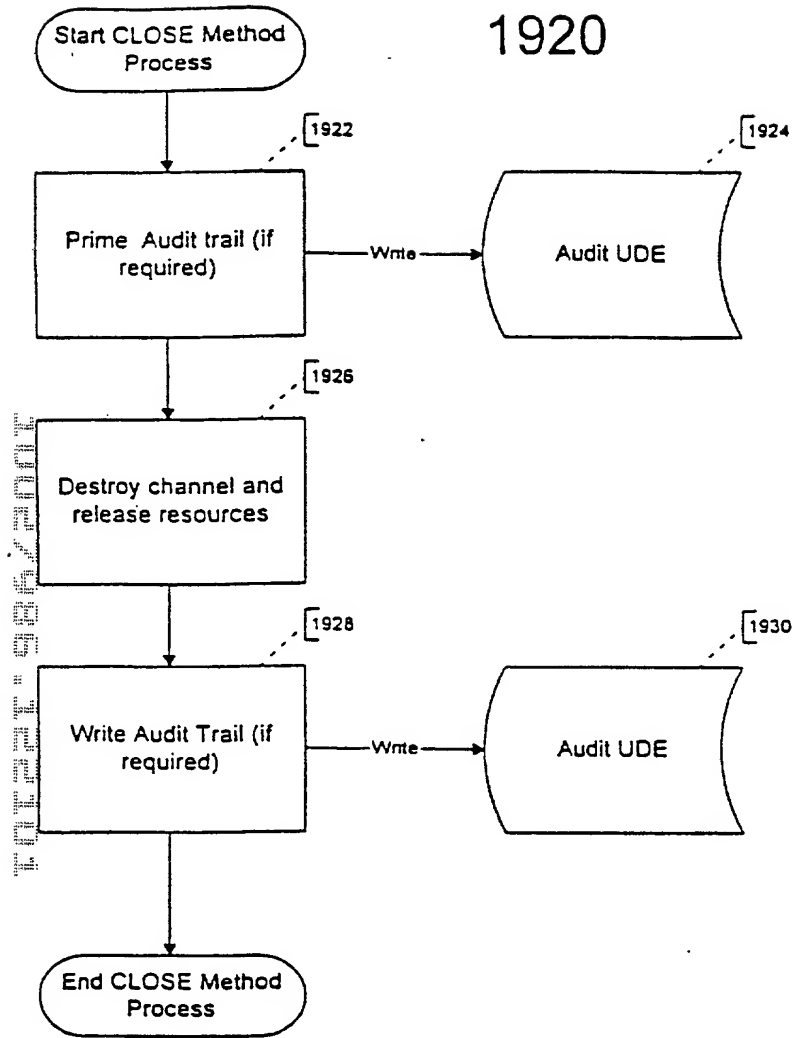


Figure 51f



CLOSE Method Process Flow

Figure 52

EVENT Method Process Flows

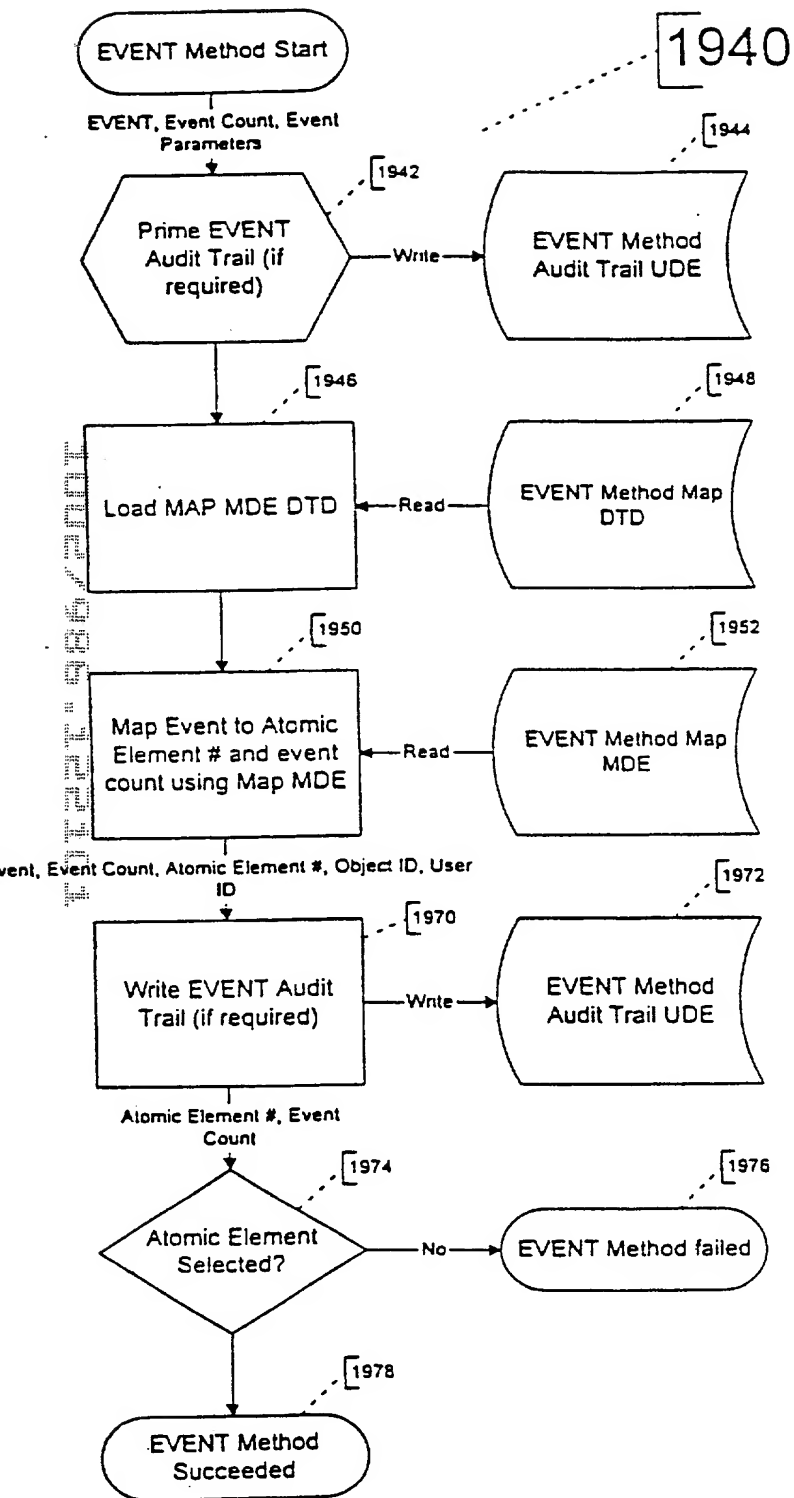


Figure 53a

Sample EVENT Method Mapping Process

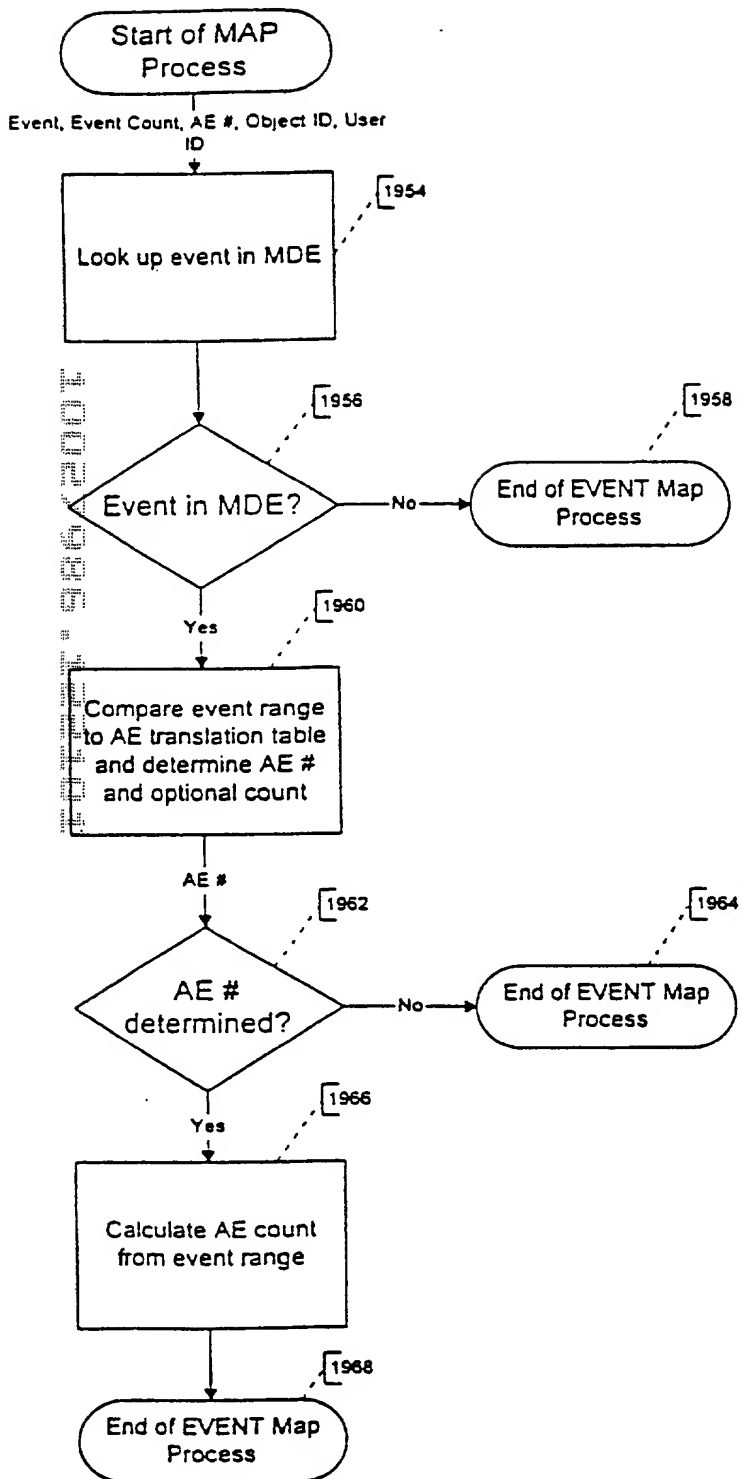
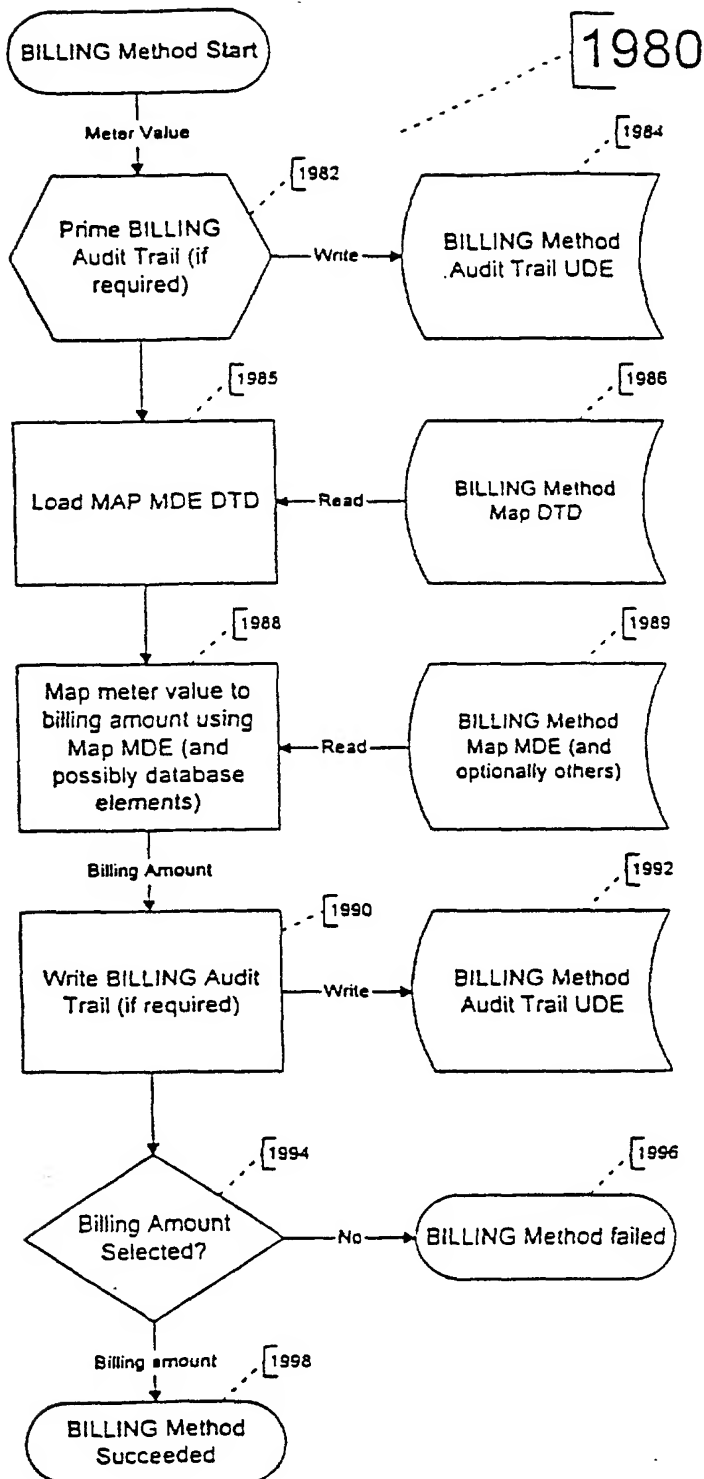


Figure 53b

10027986 122104 985/200



BILLING Method Process Flows

Figure 53c

10027926-123101

ACCESS Method Process Flow

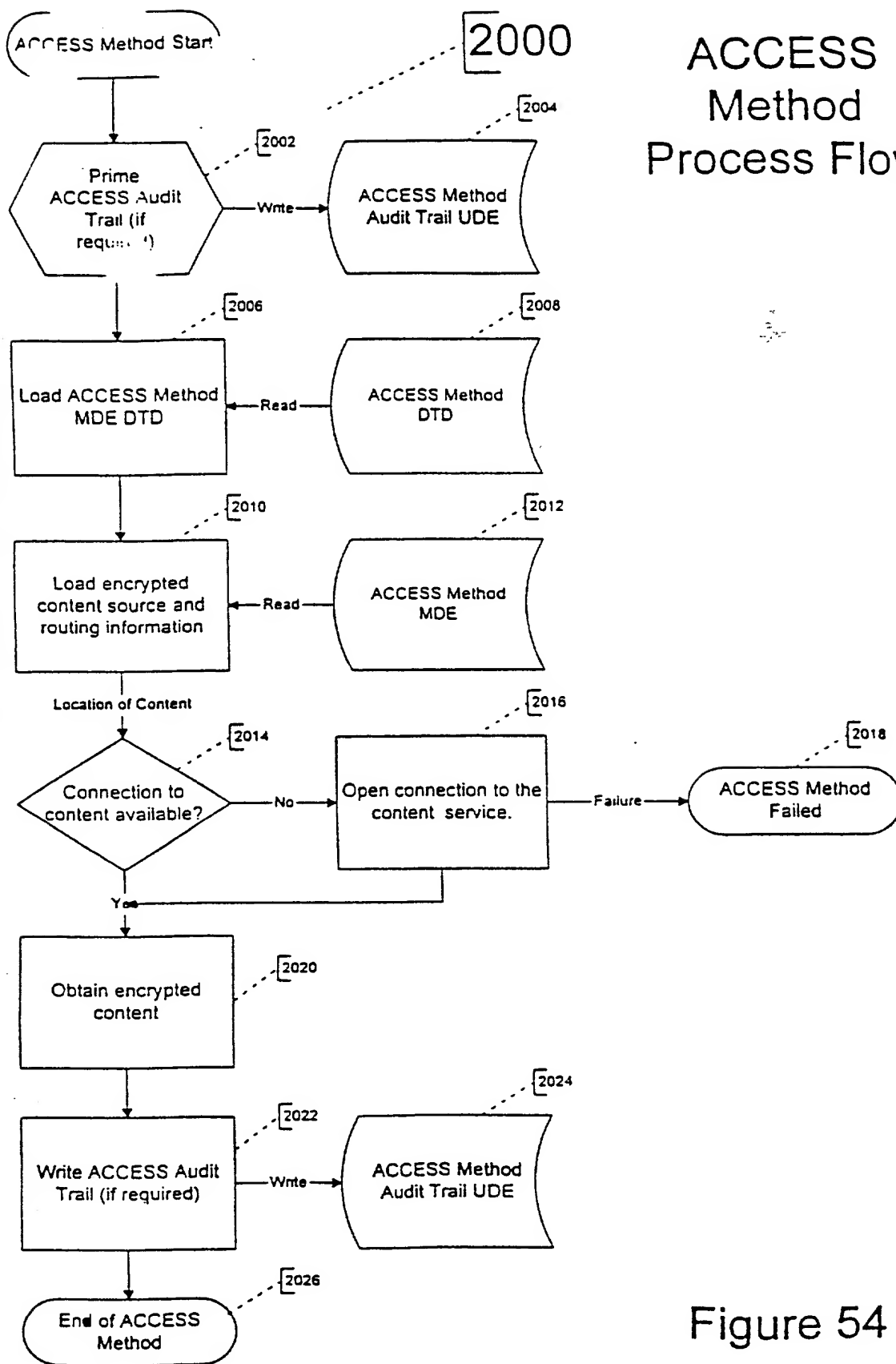


Figure 54

DECRYPT Method Process Flow

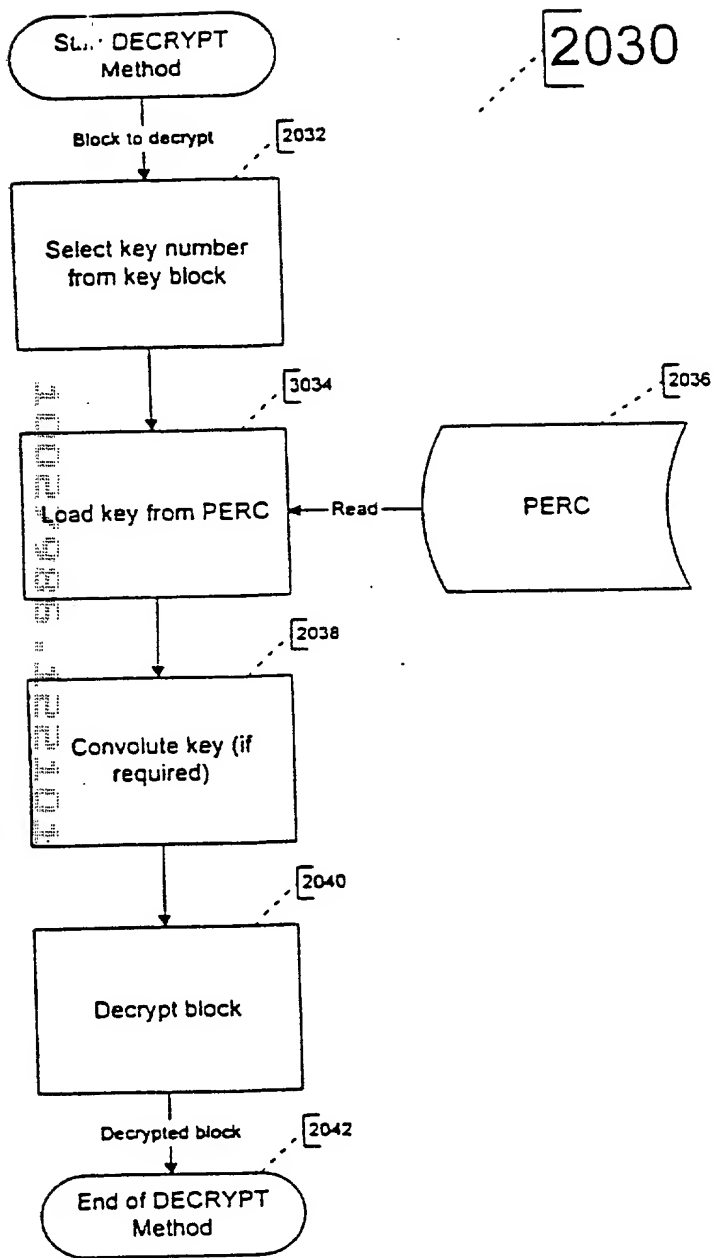
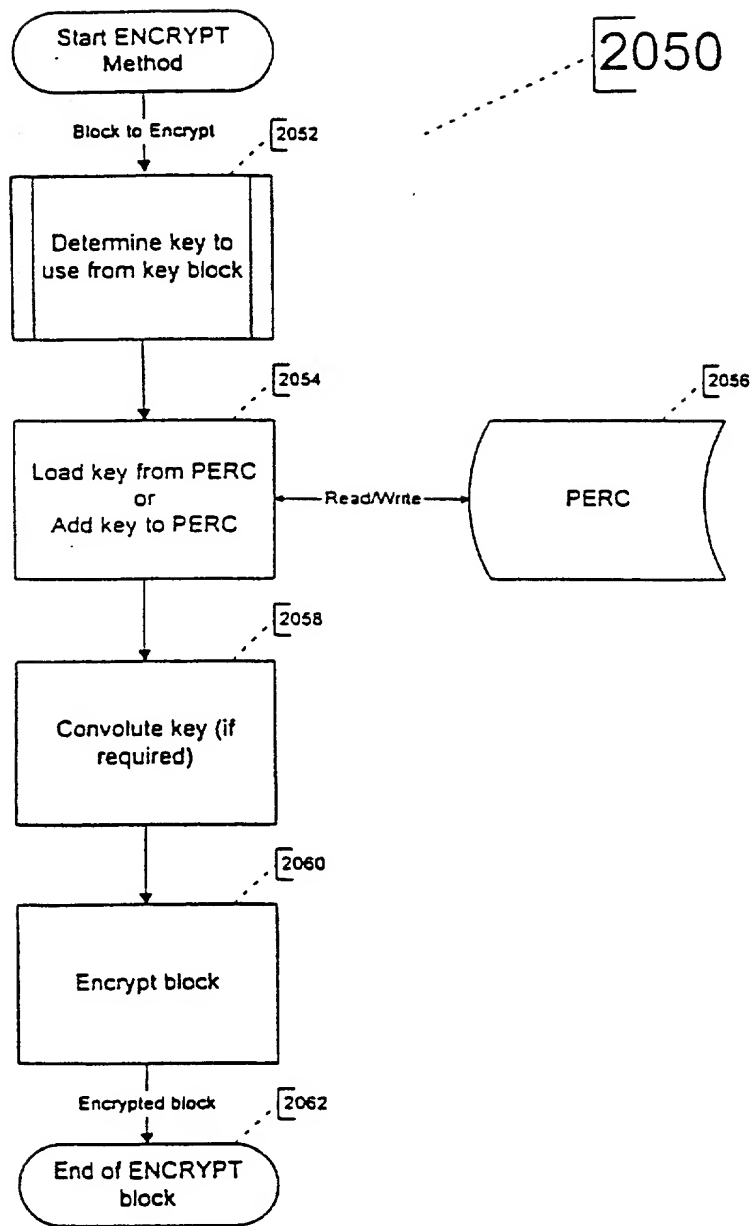


Figure 55a

10027926-1210-1



ENCRYPT Method Process Flow

Figure 55b

CONTENT Method Process Flow

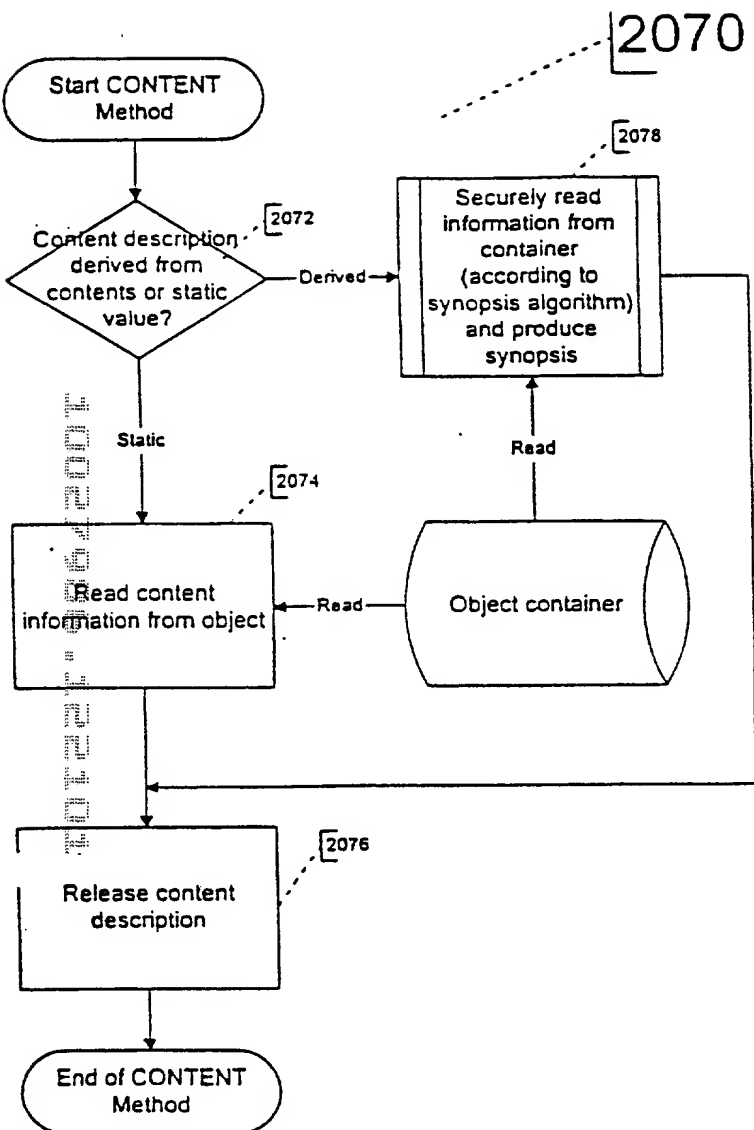


Figure 56

10027986-122104

EXTRACT Method Process Flow

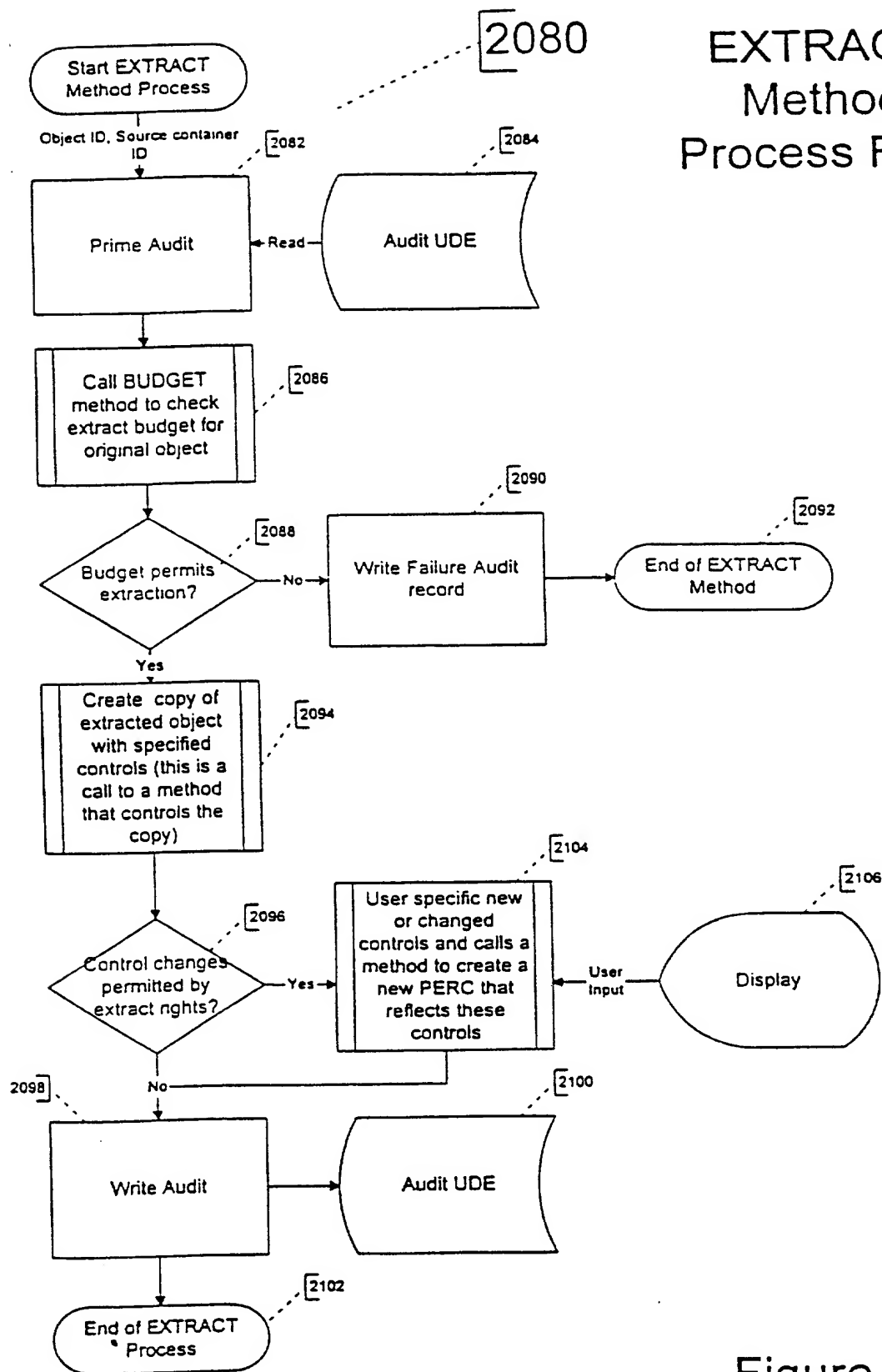


Figure 57a

101221 986/2007

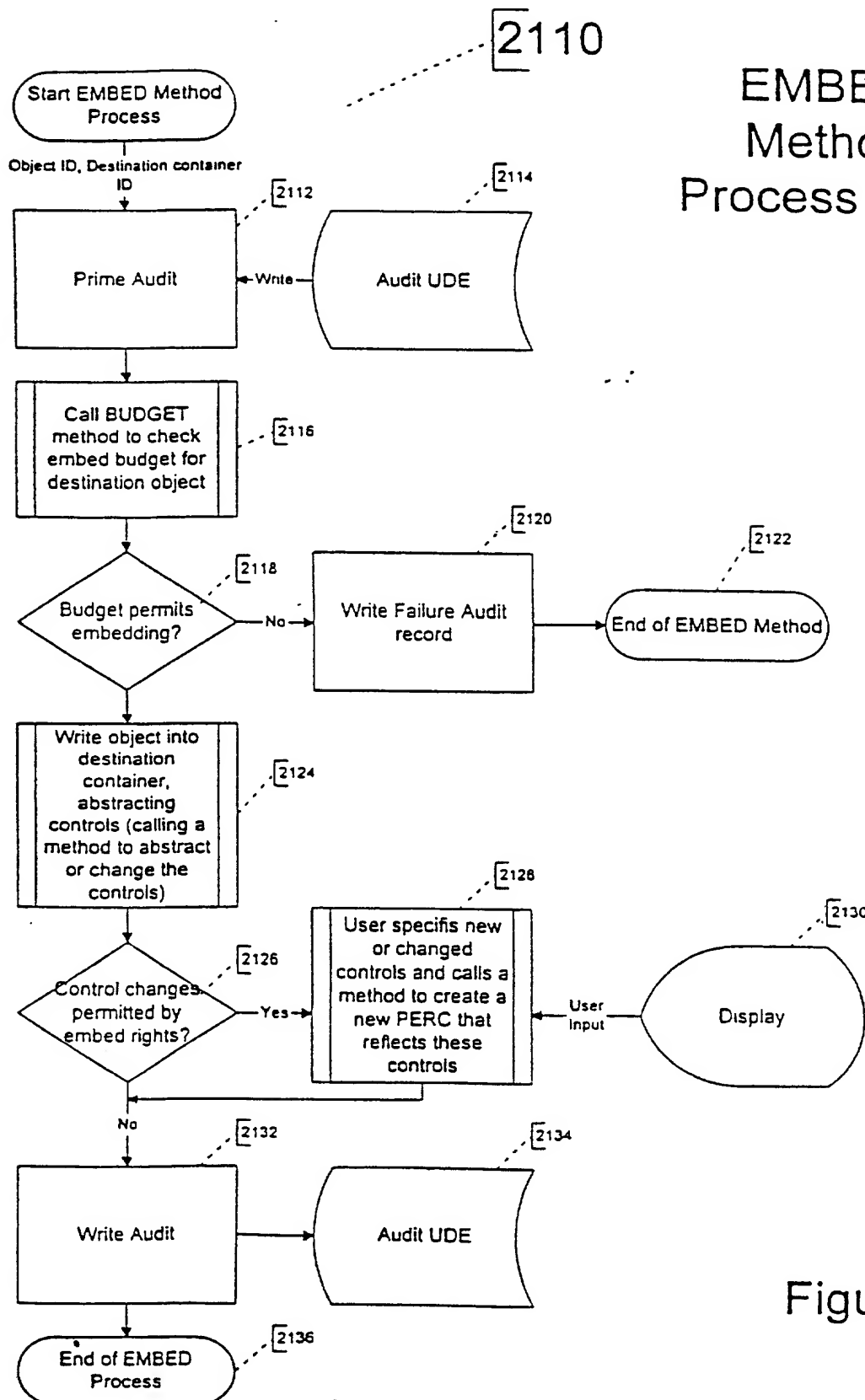
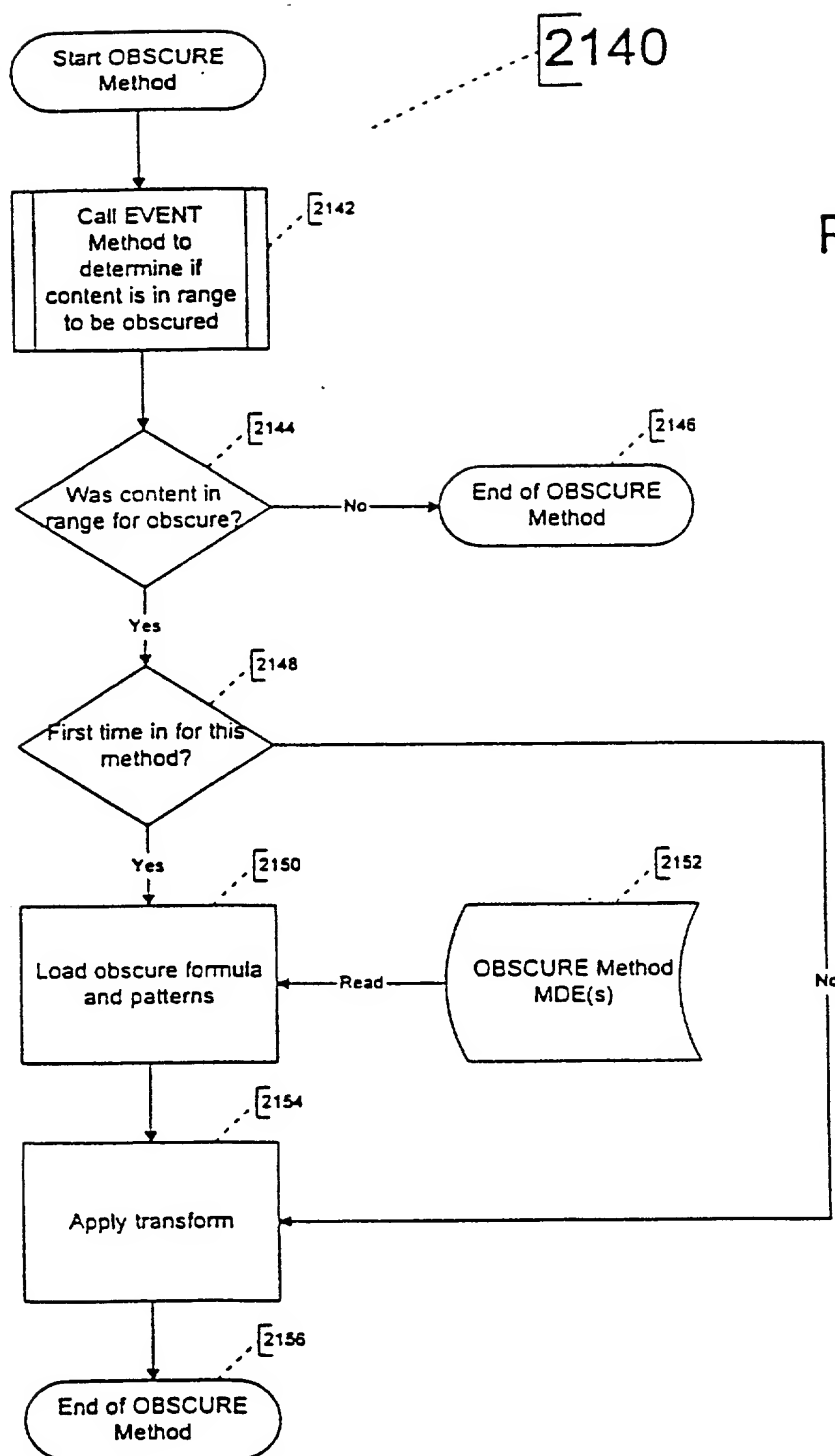


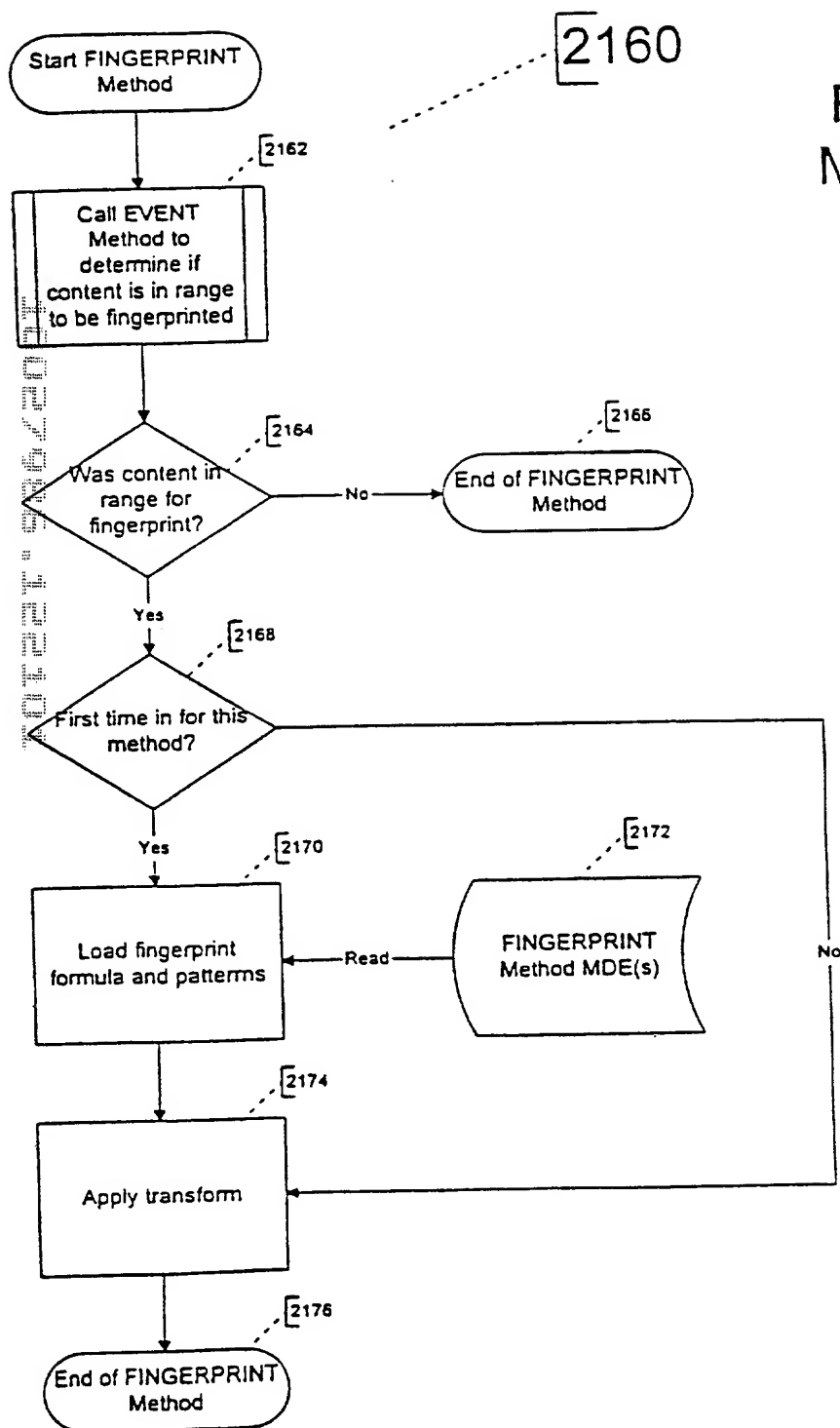
Figure 57b

10027986-12104



OBSCURE Method Process Flow

Figure 58a



FINGERPRINT Method Process Flow

Figure 58b

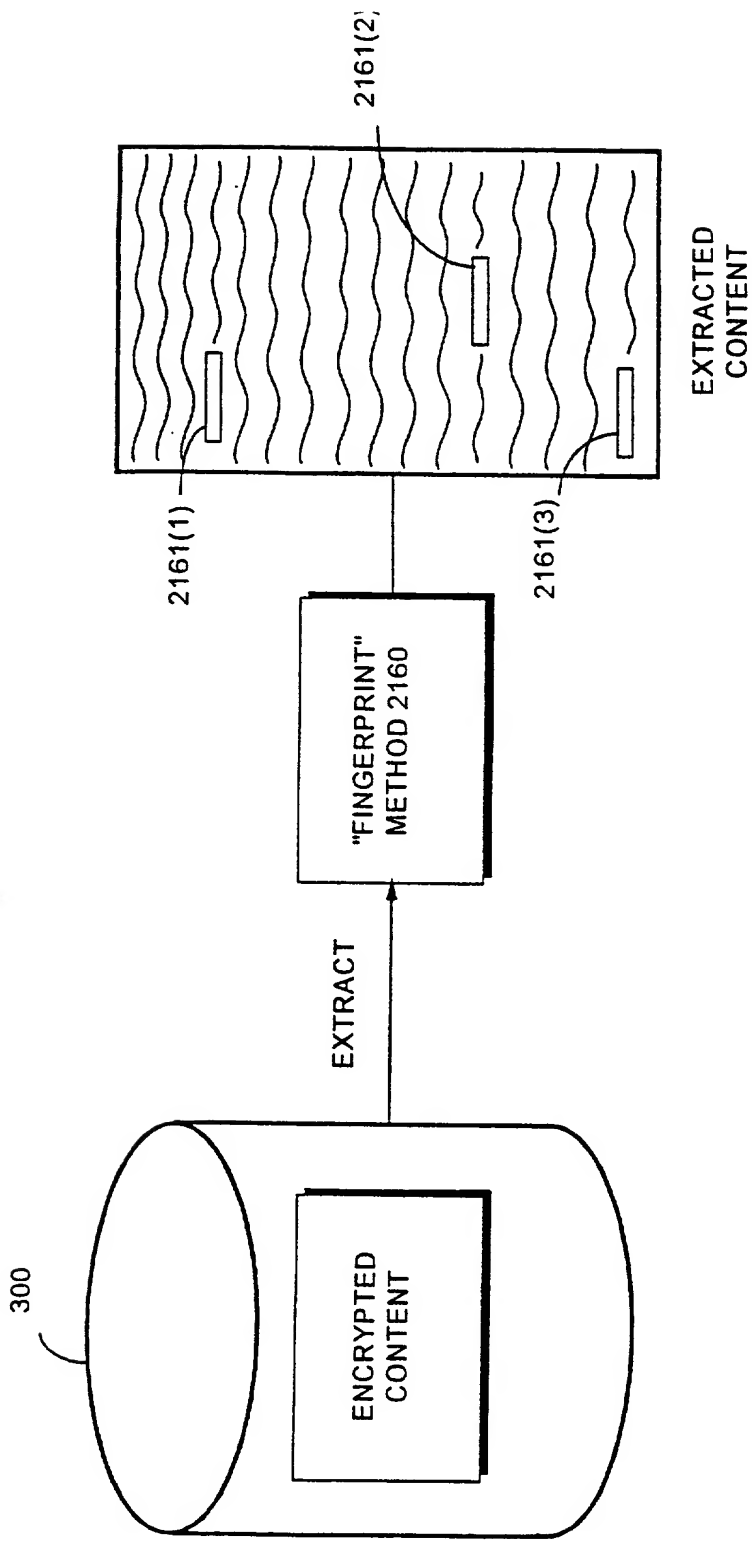


FIG. 58C

DESTROY Method Process Flow

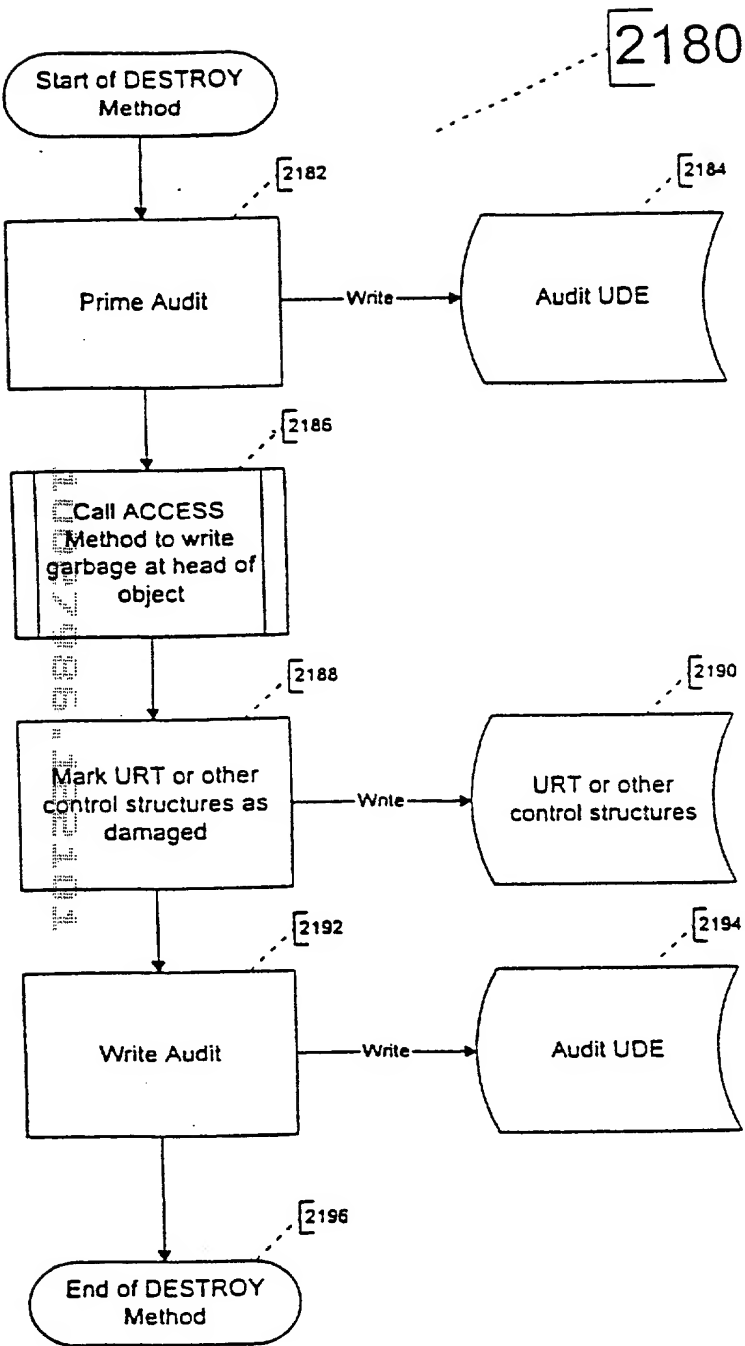
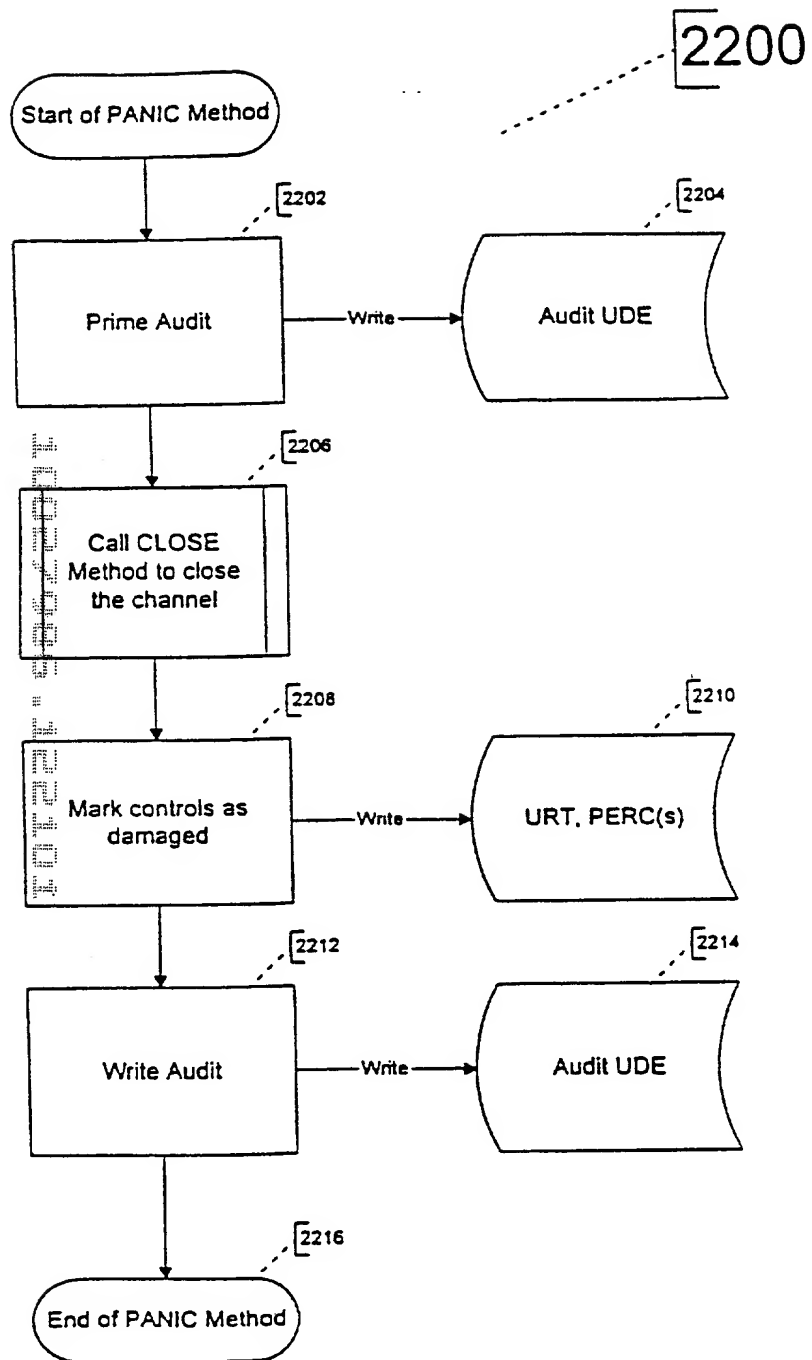


Figure 59



PANIC Method Process Flow

Figure 60

METER Method Use Process Flow

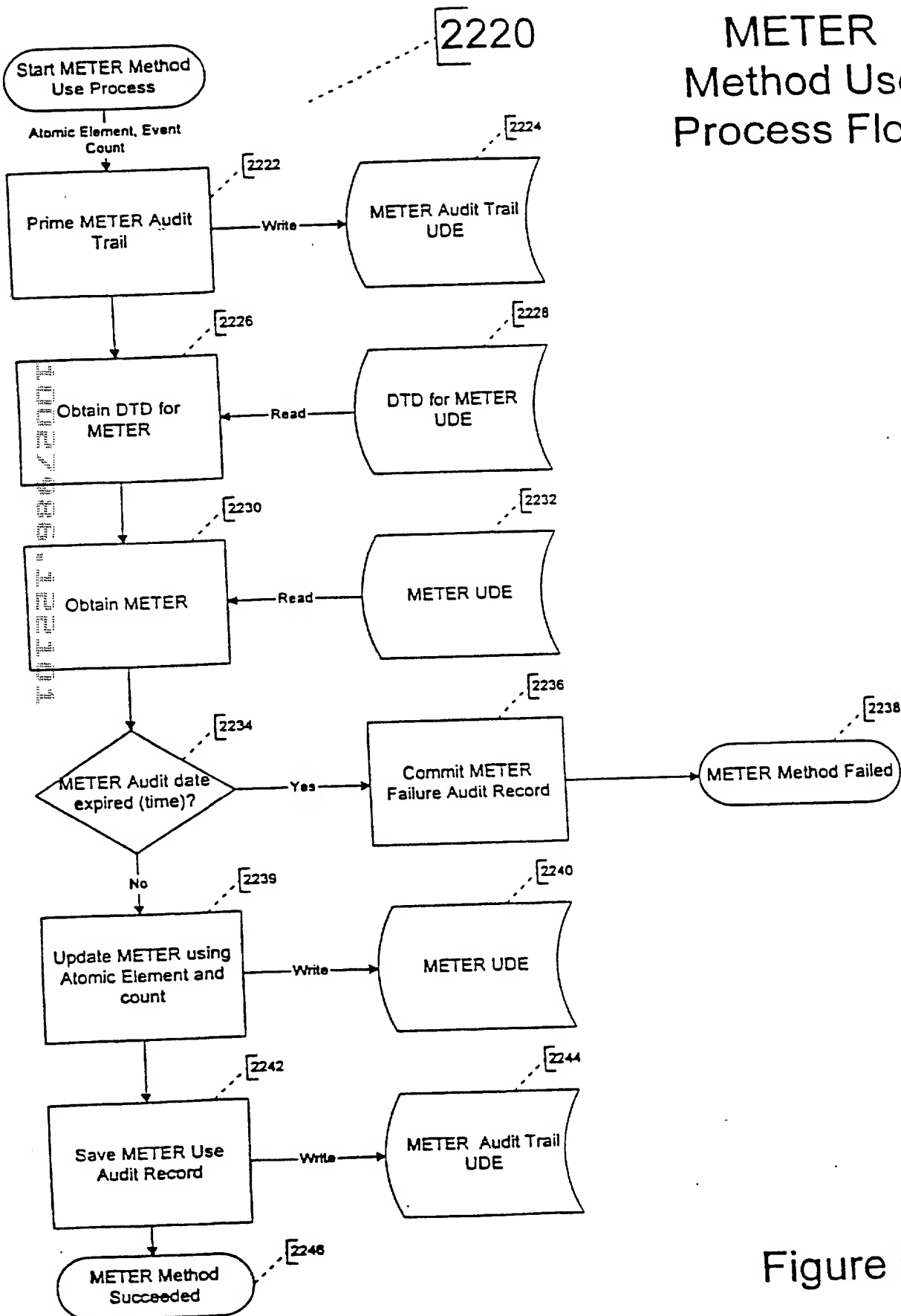
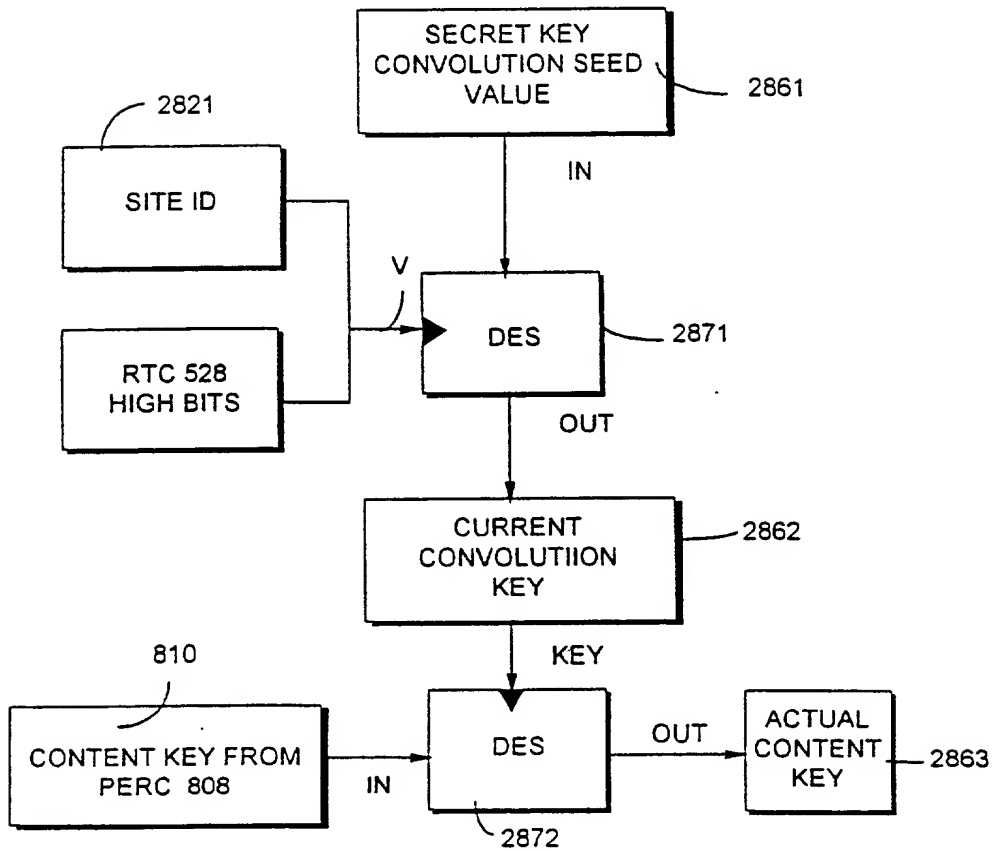


Figure 61

10027996-12101

FIG. 62
KEY CONVOLUTION PROCESS



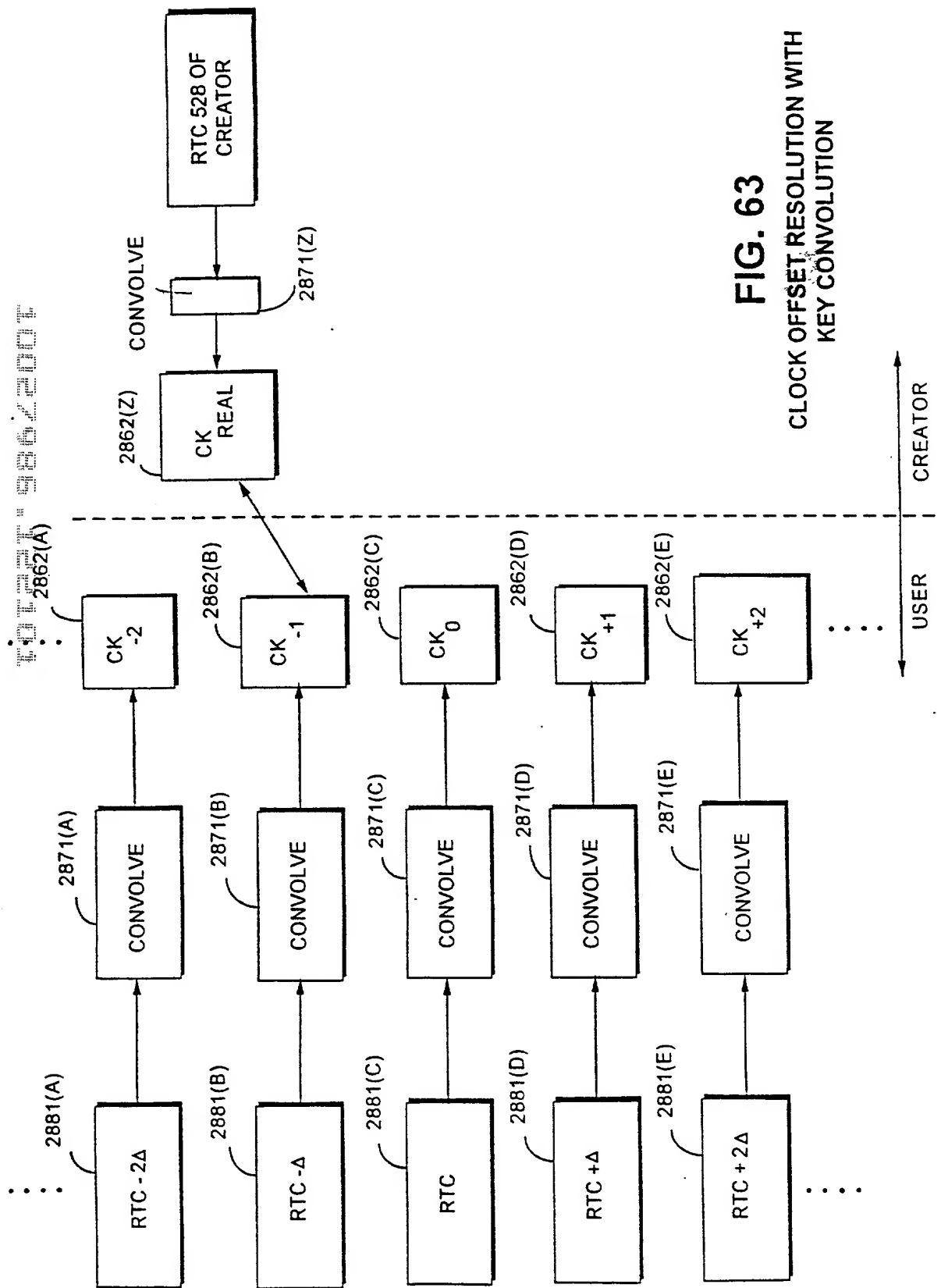
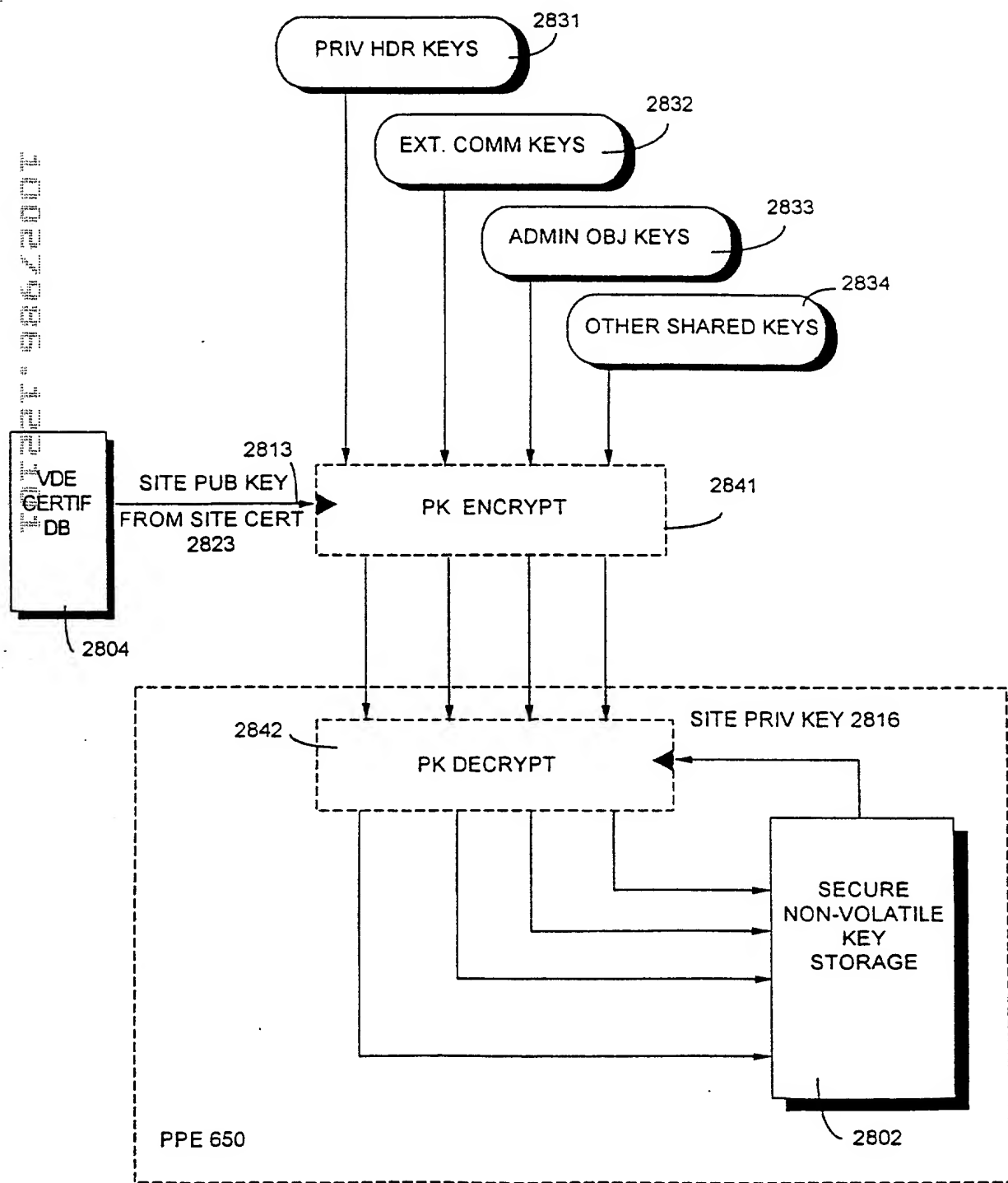


FIG. 65 KEY INSTALLATION & UPDATE



100279001 121071 0002001

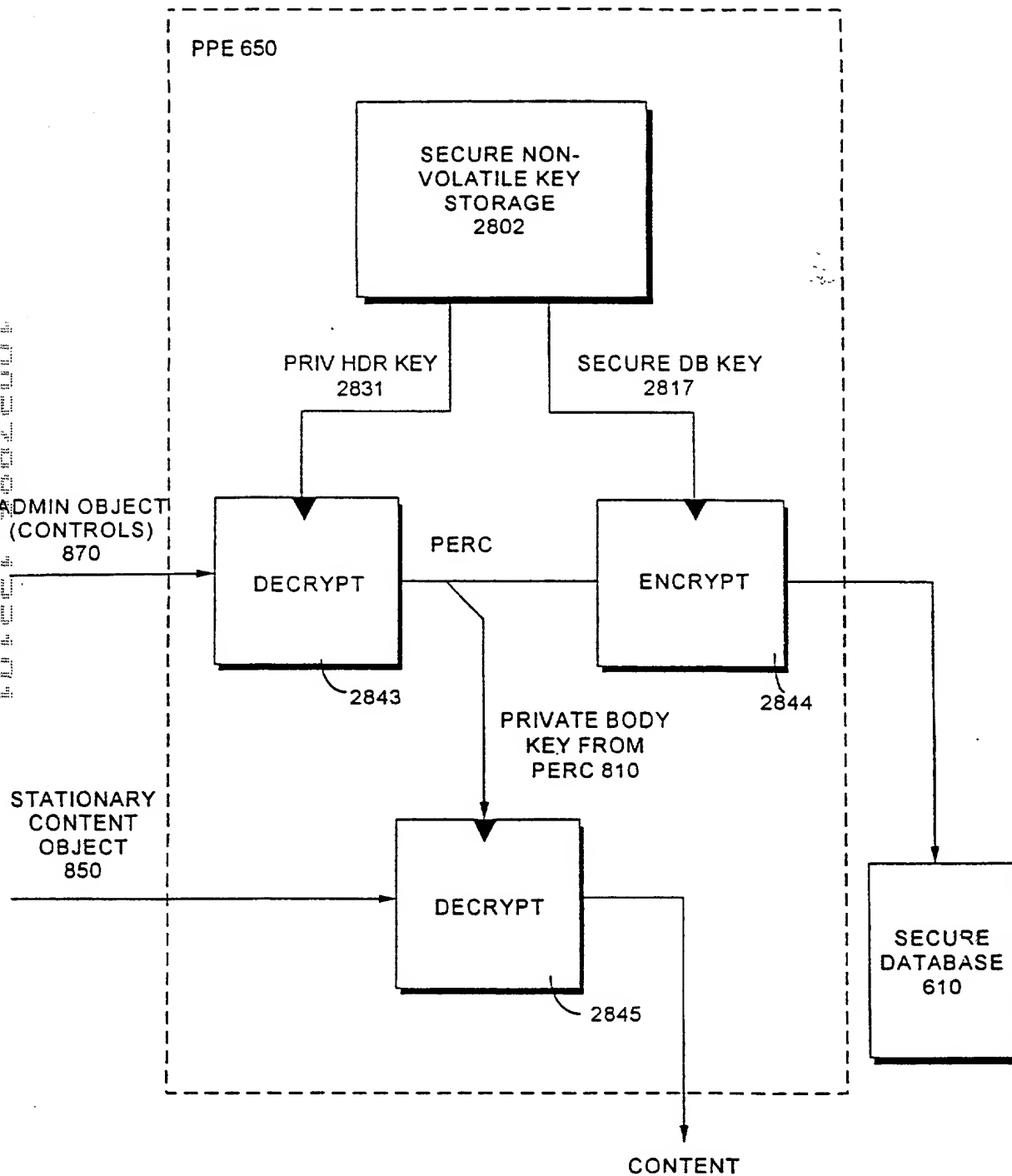


FIG. 66 STATIONARY OBJECT DECRYPTION

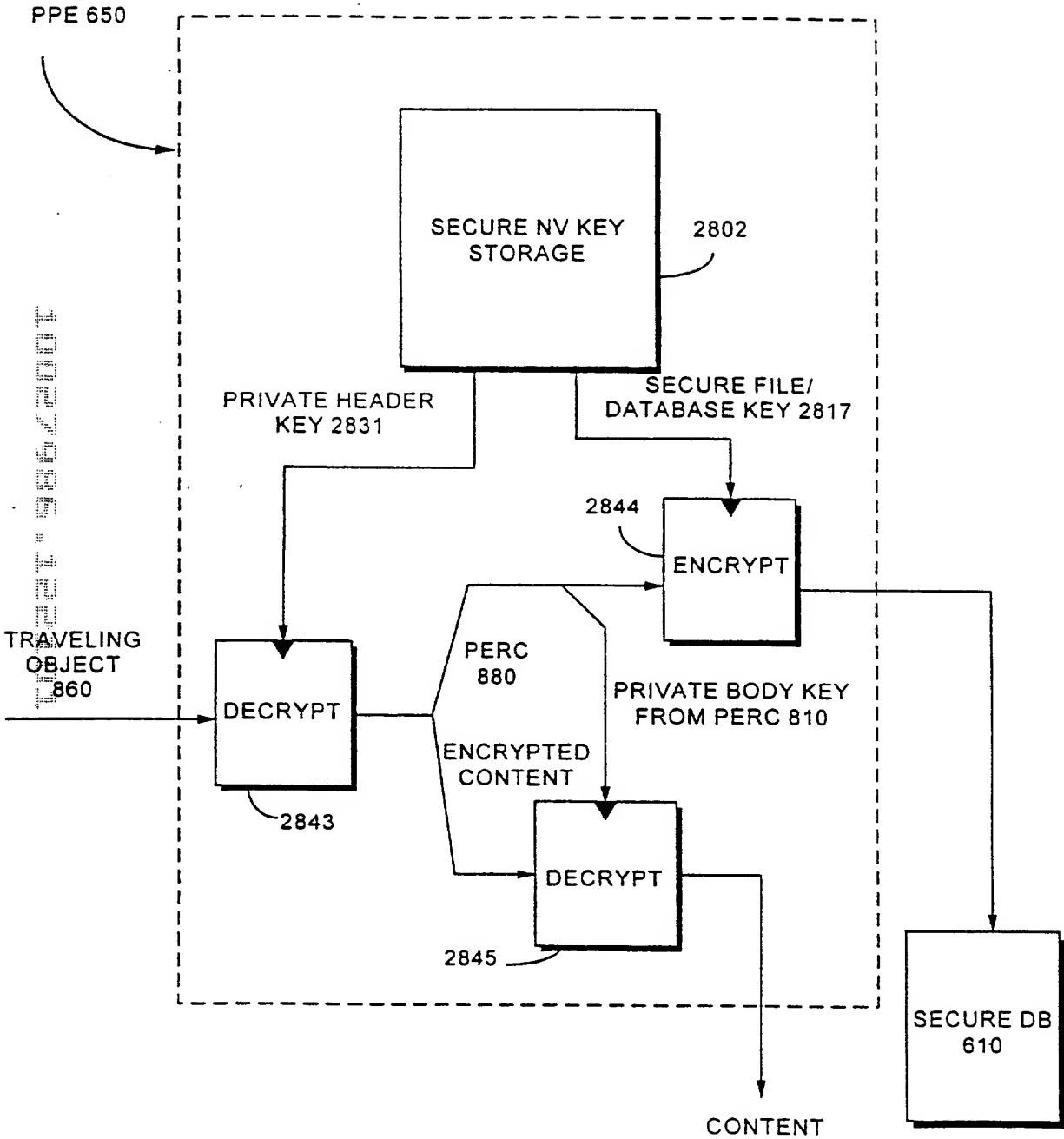


FIG. 67 TRAVELING OBJECT DECRYPTION

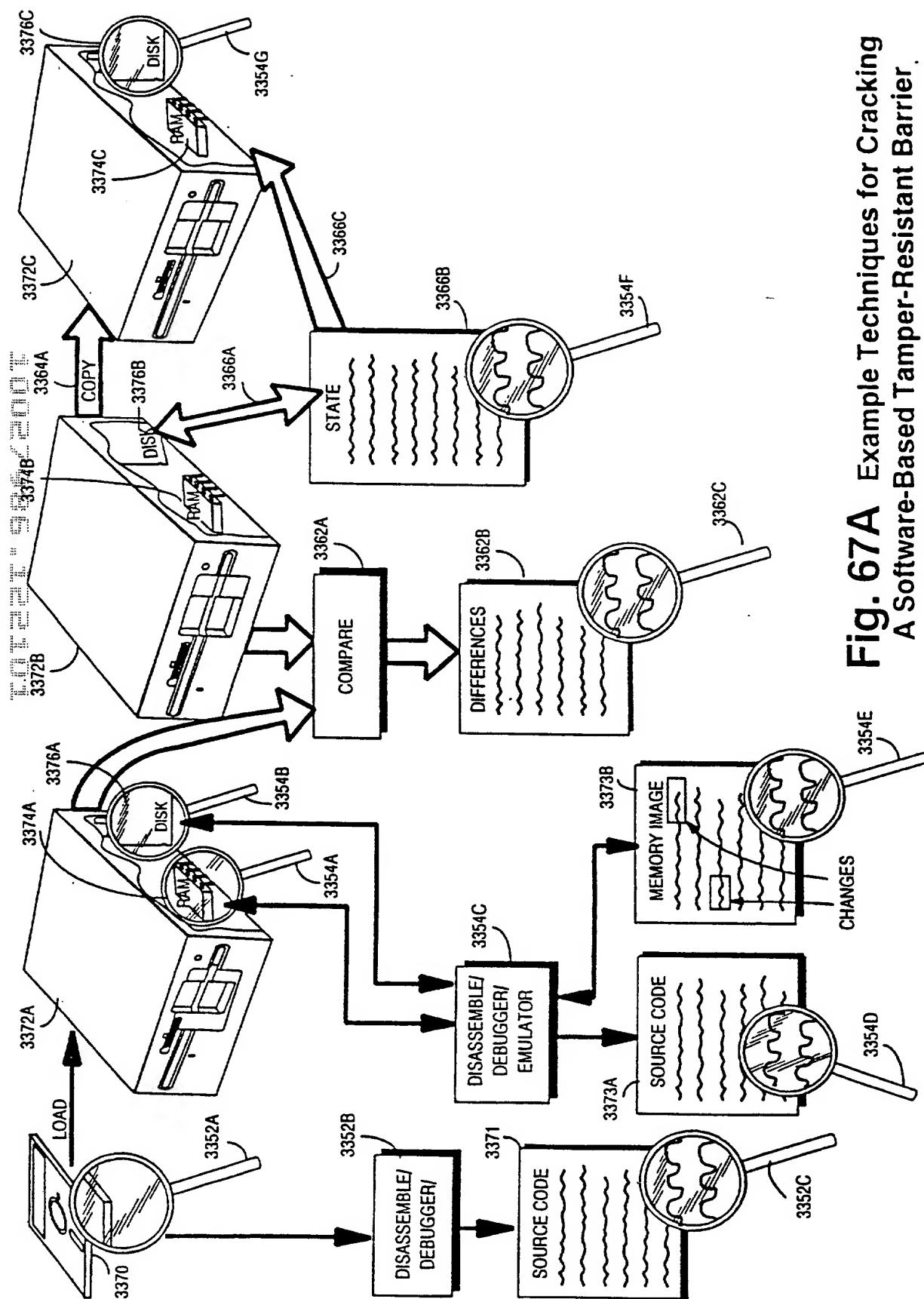
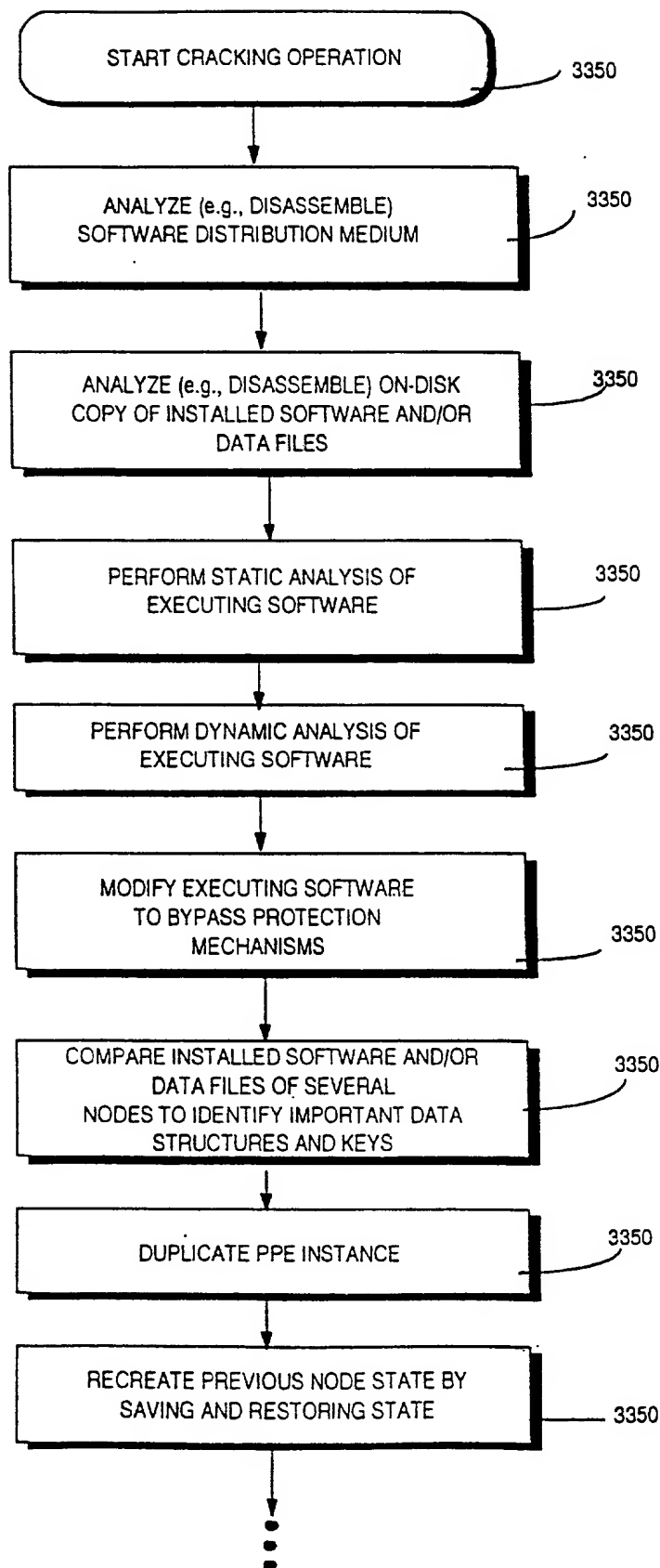


Fig. 67A Example Techniques for Cracking
A Software-Based Tamper-Resistant Barrier.

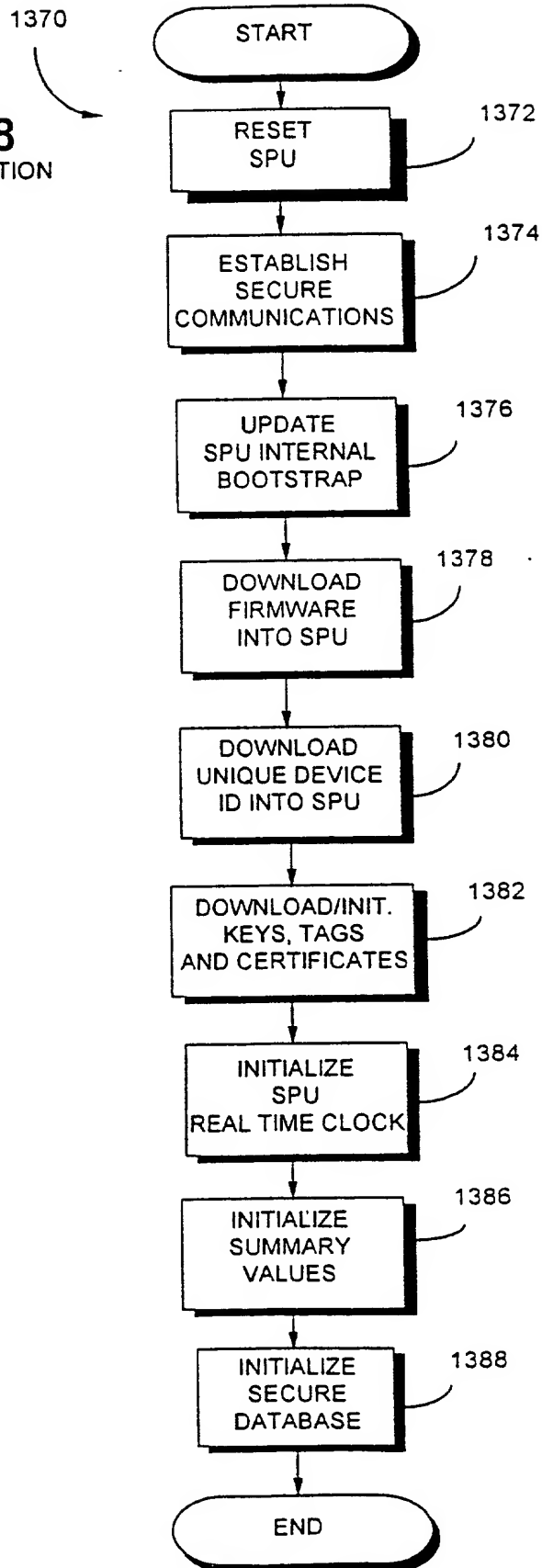
Fig. 67B
Example Cracking
Operation

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101221 986/2007



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FIG. 68
SPU INITIALIZATION



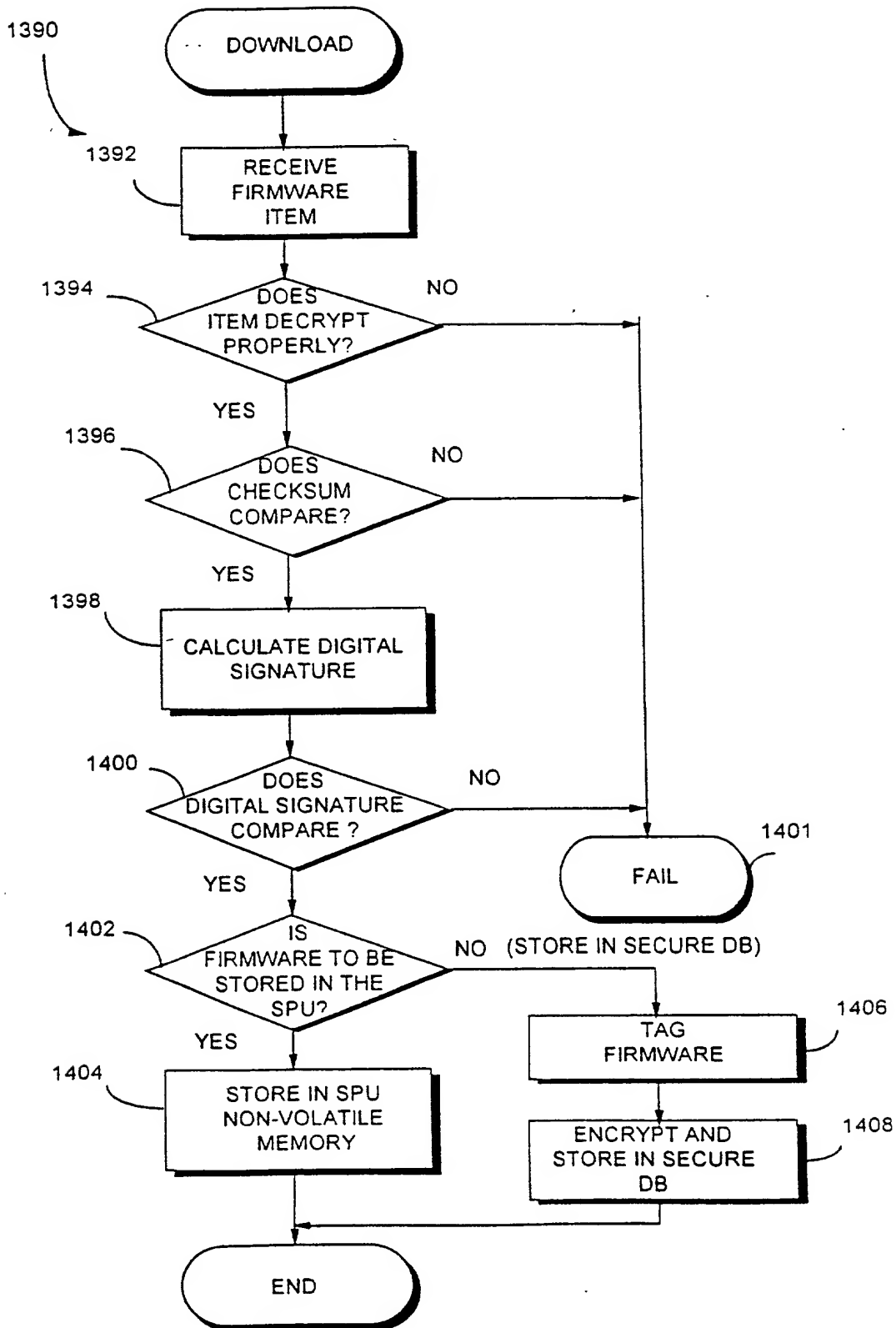


FIG. 69

SPU FIRMWARE
DOWNLOAD

Fig. 69A Software Distributed In Encrypted Form

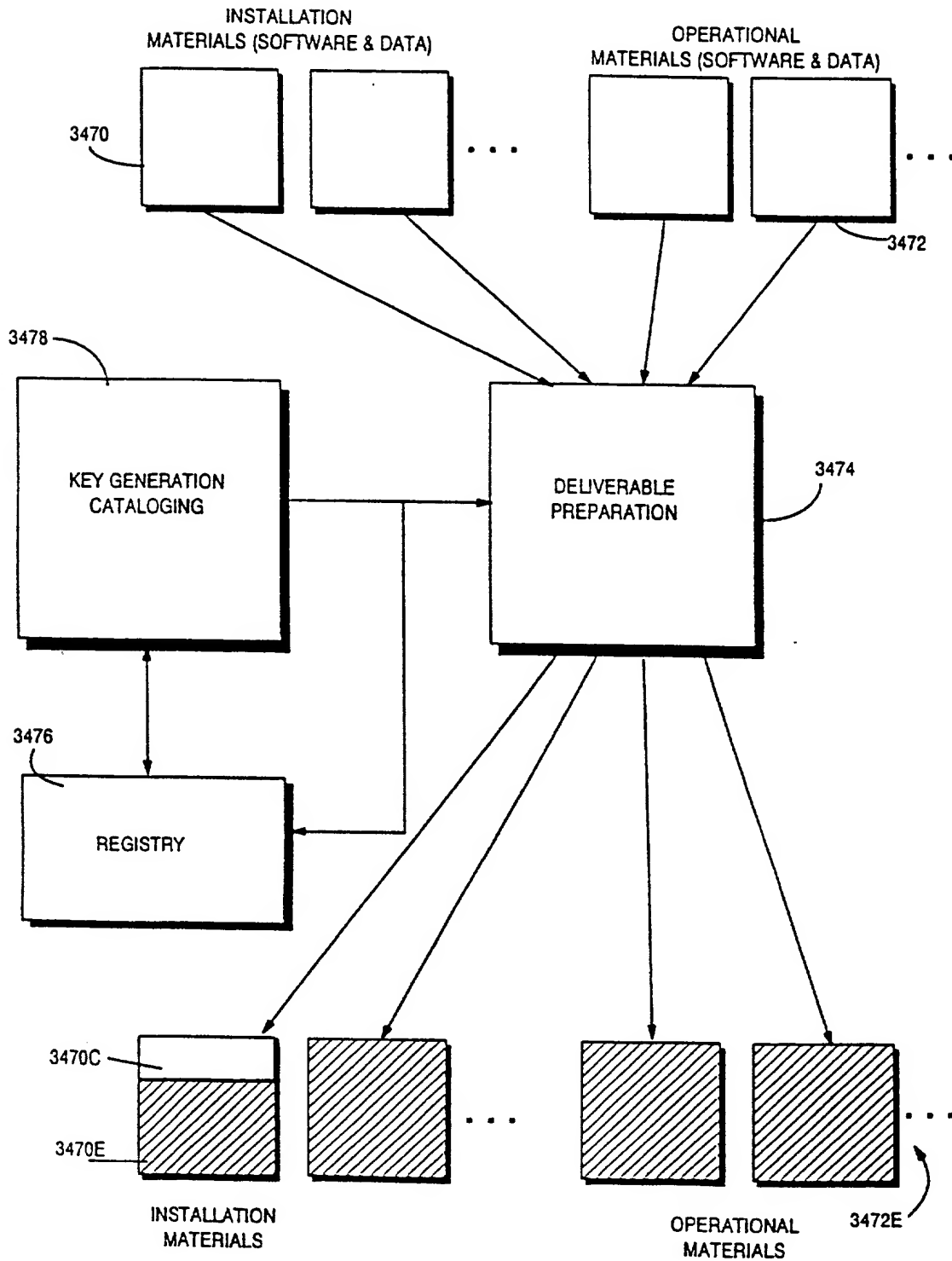


Fig. 69B Example Installation Routine

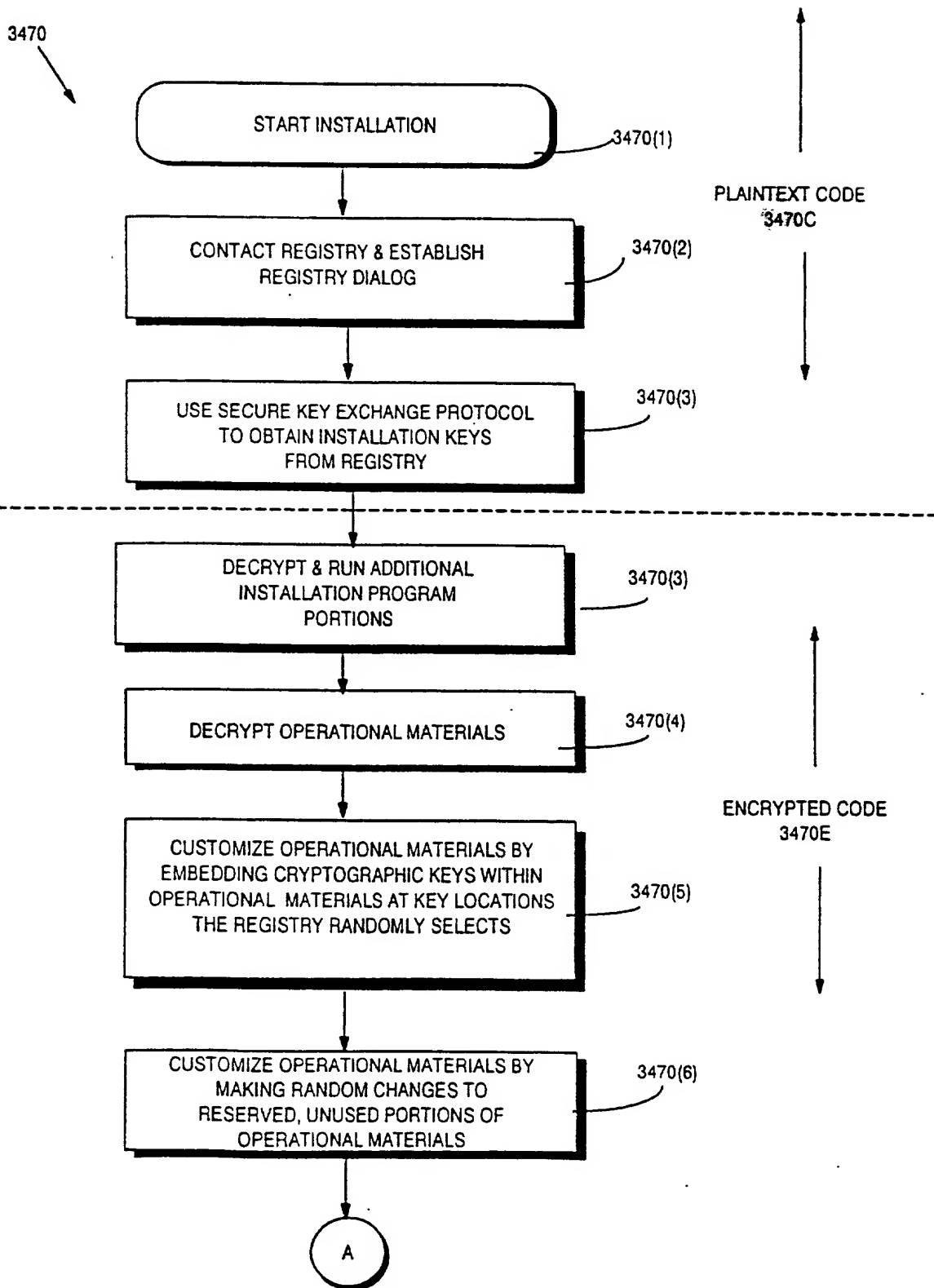
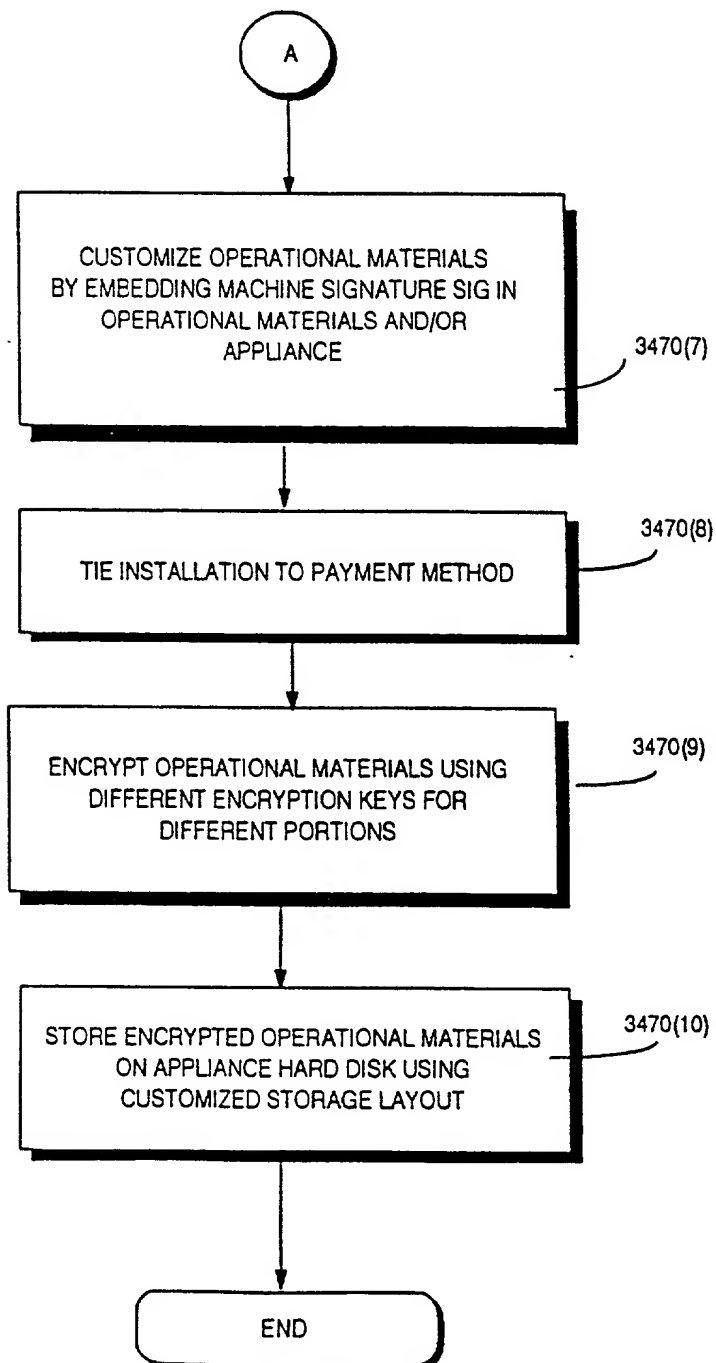
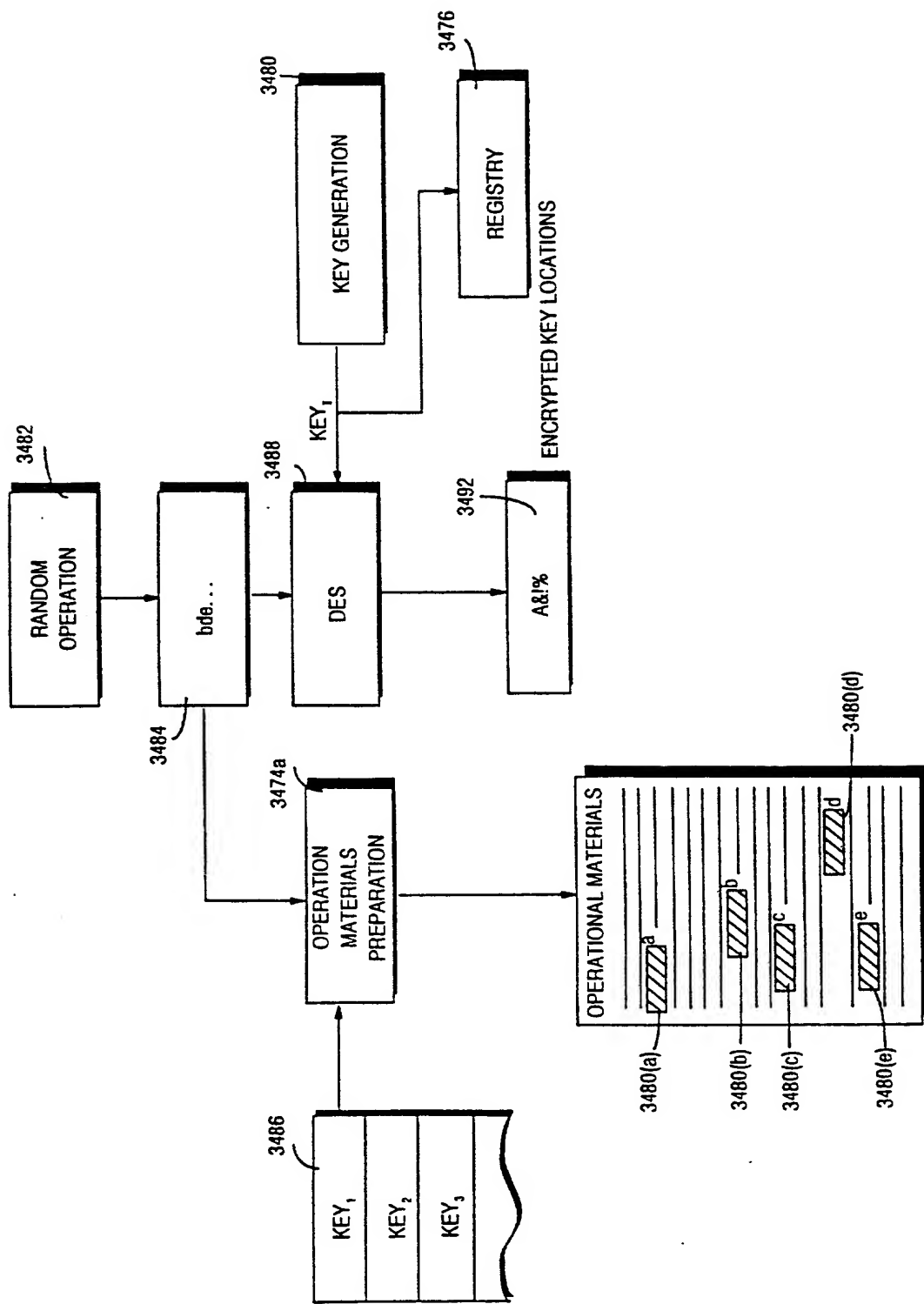


Fig. 69C Example Installation Routine



100996/2007

Fig. 69D Embedding Keys At Different Locations With Operational Materials



10027936-1-2001

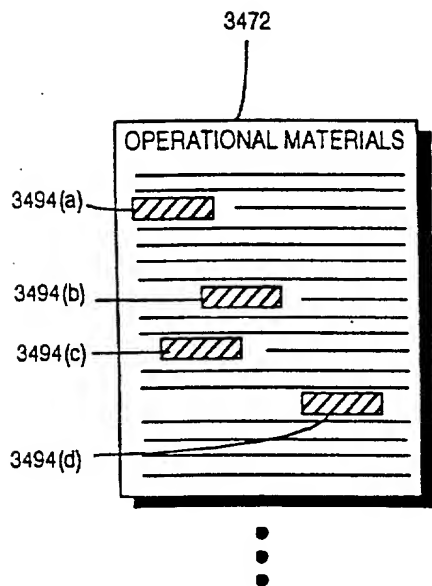


Fig. 69E
Example Locations For Random
Modifications and Fingerprints

Fig. 69F
Example Customized Static
Storage Layout

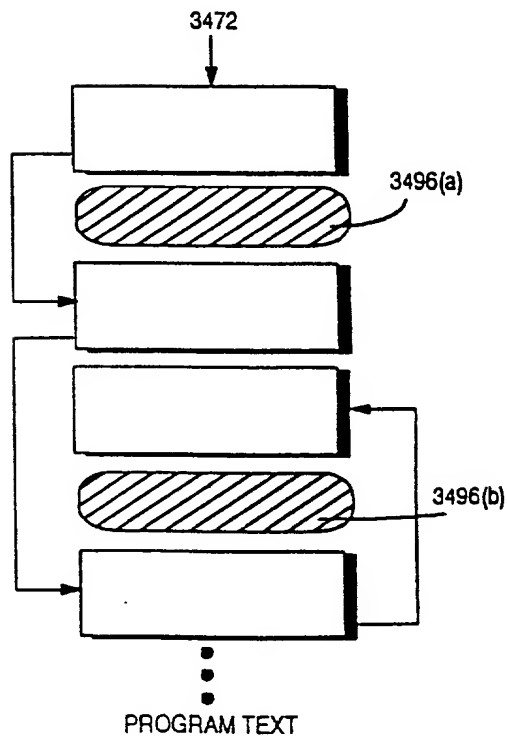


Fig. 69G
Example Machine Signature
Locations

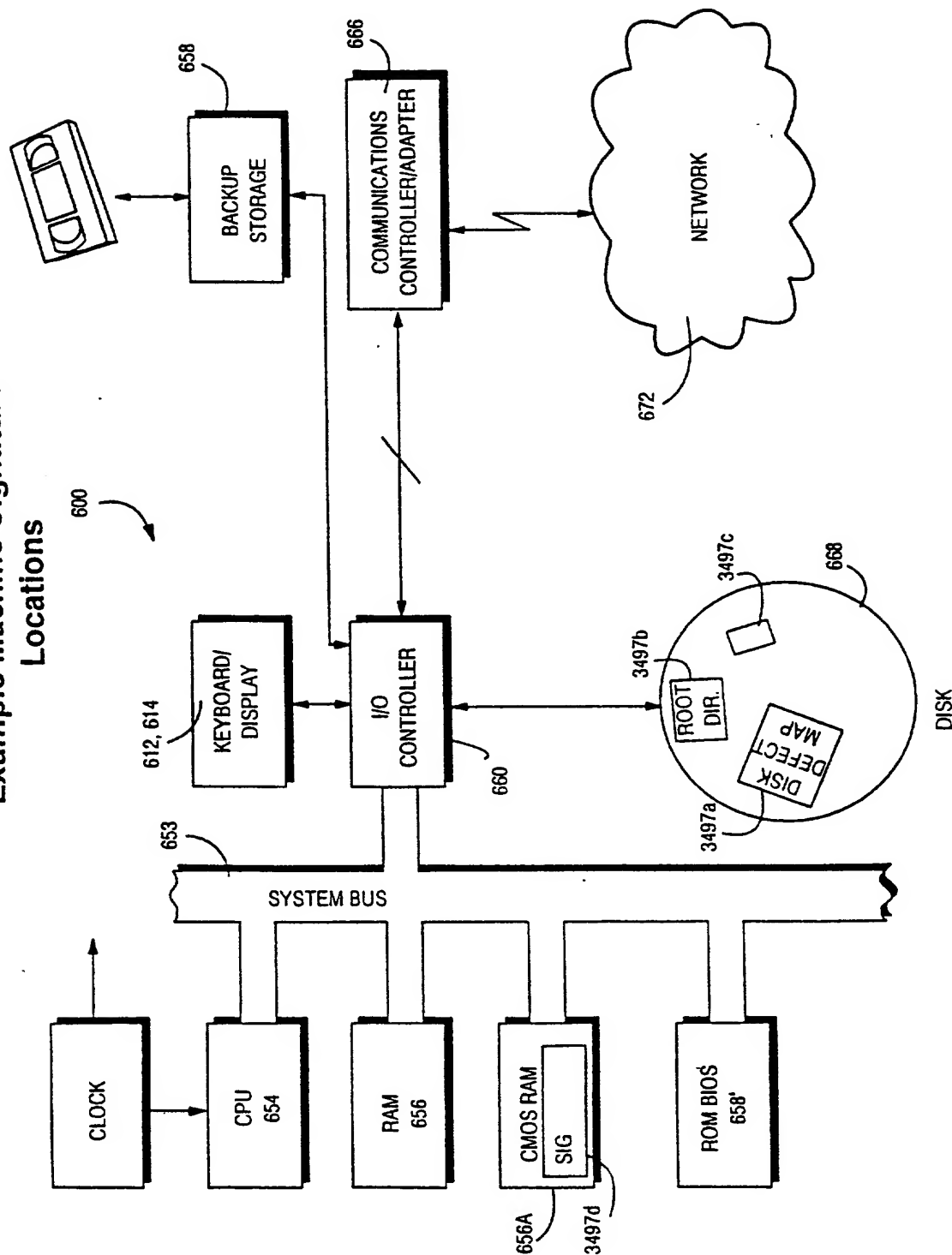


Fig. 69H
Sequence Dependent and Independent Processes

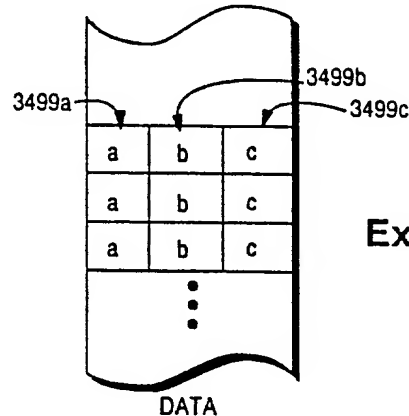
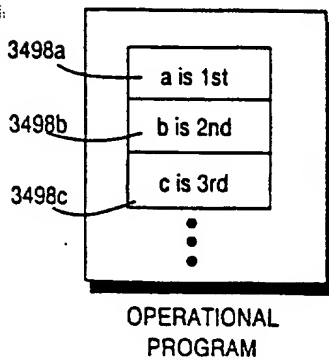
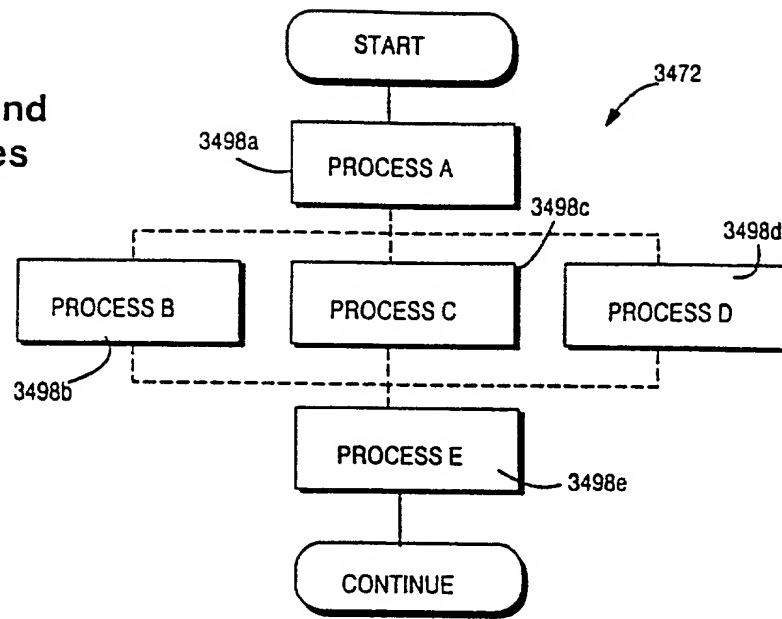


Fig. 69I
Example First Order

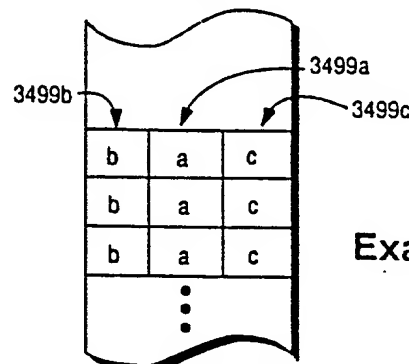
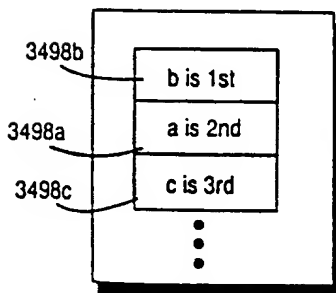


Fig. 69J
Example Second Order

Fig. 69K
Example Dynamic Protection
Mechanisms

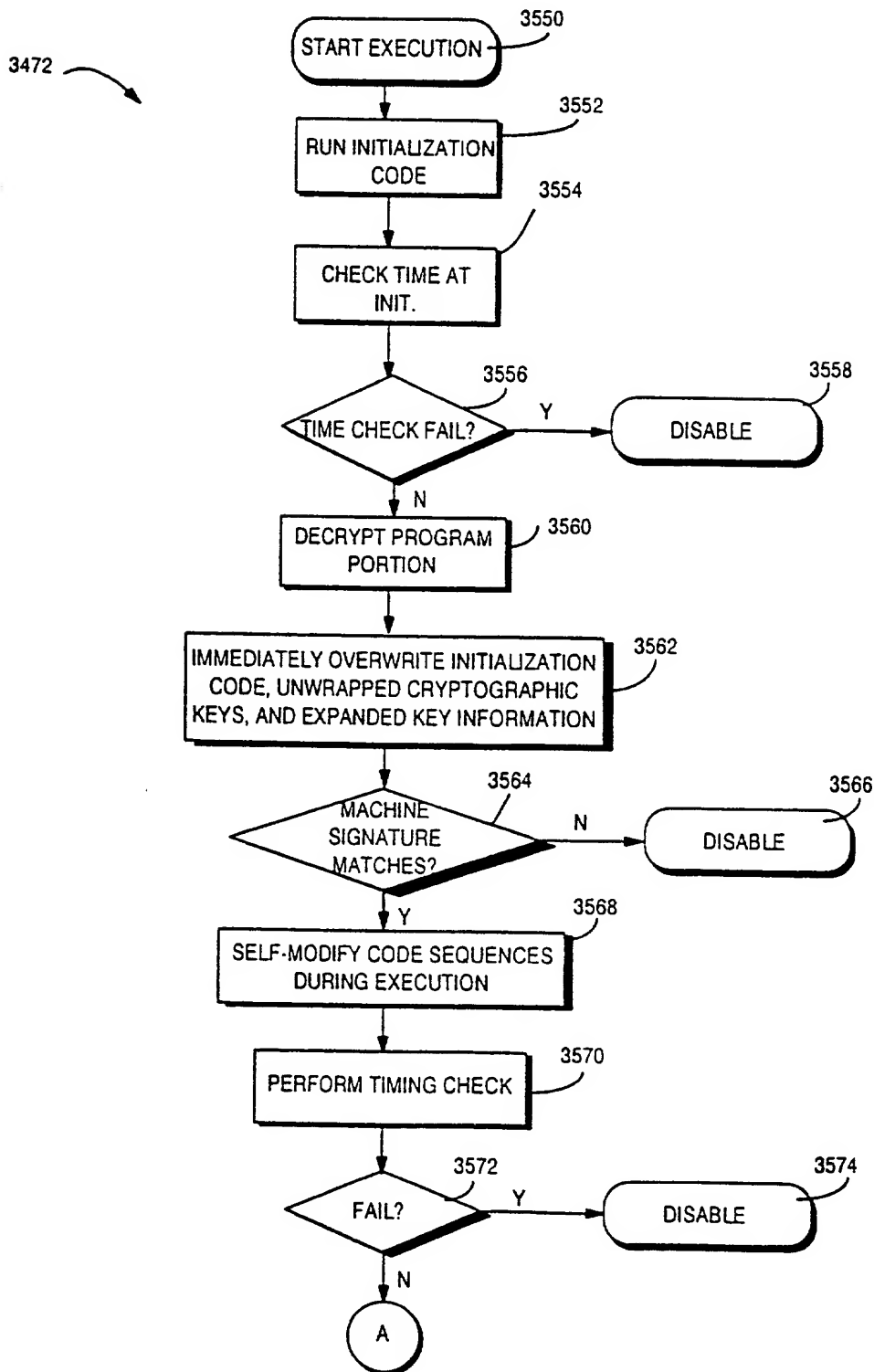


Fig. 69L
Example Dynamic
Protection
Mechanisms

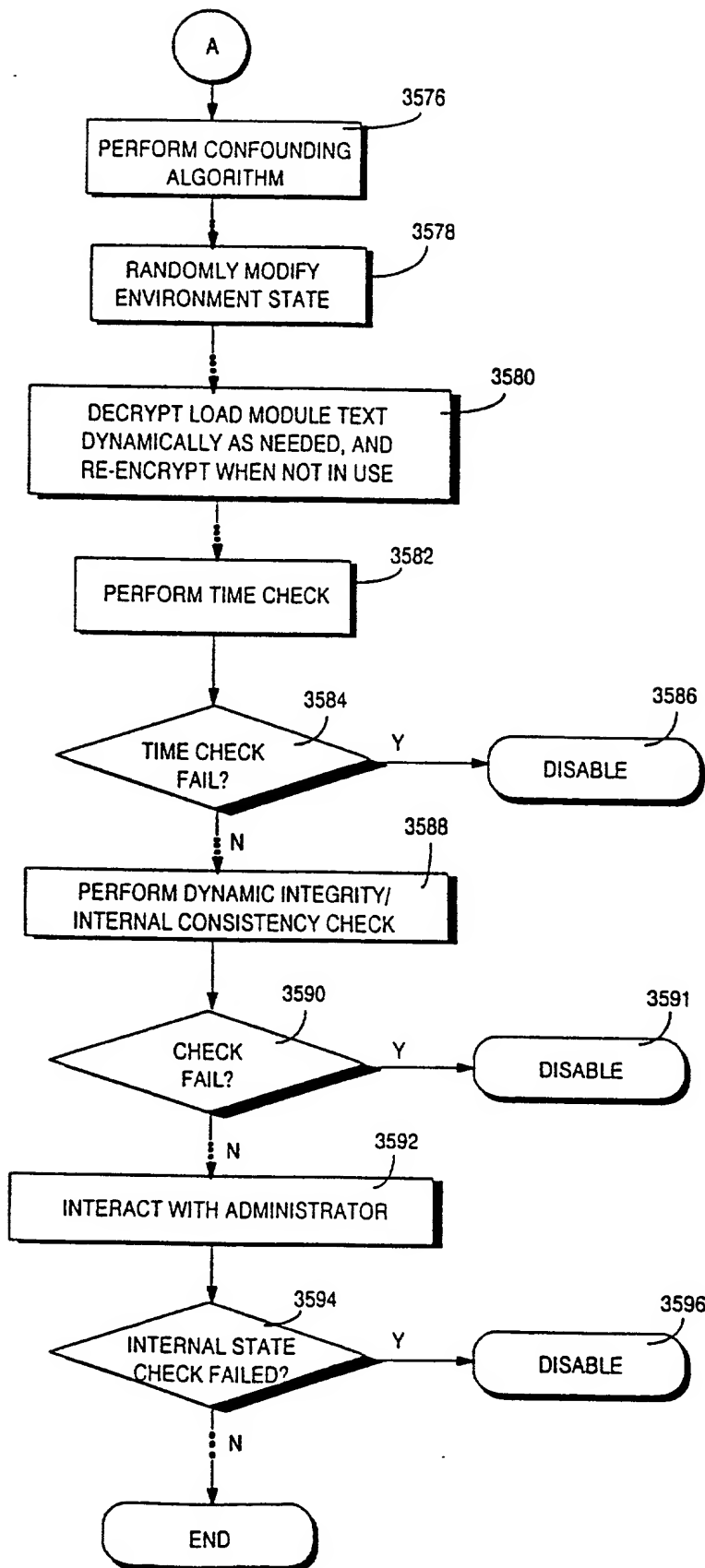
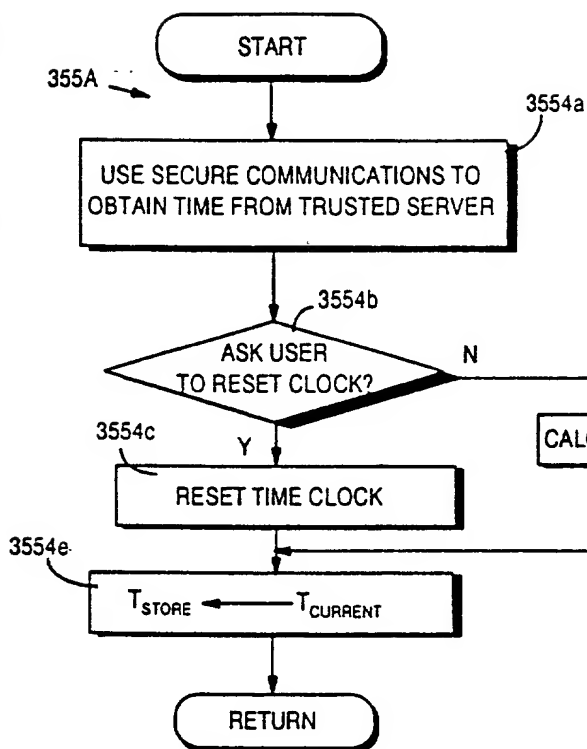


Fig. 69M
Example Time
Check At
Initialization
Routine

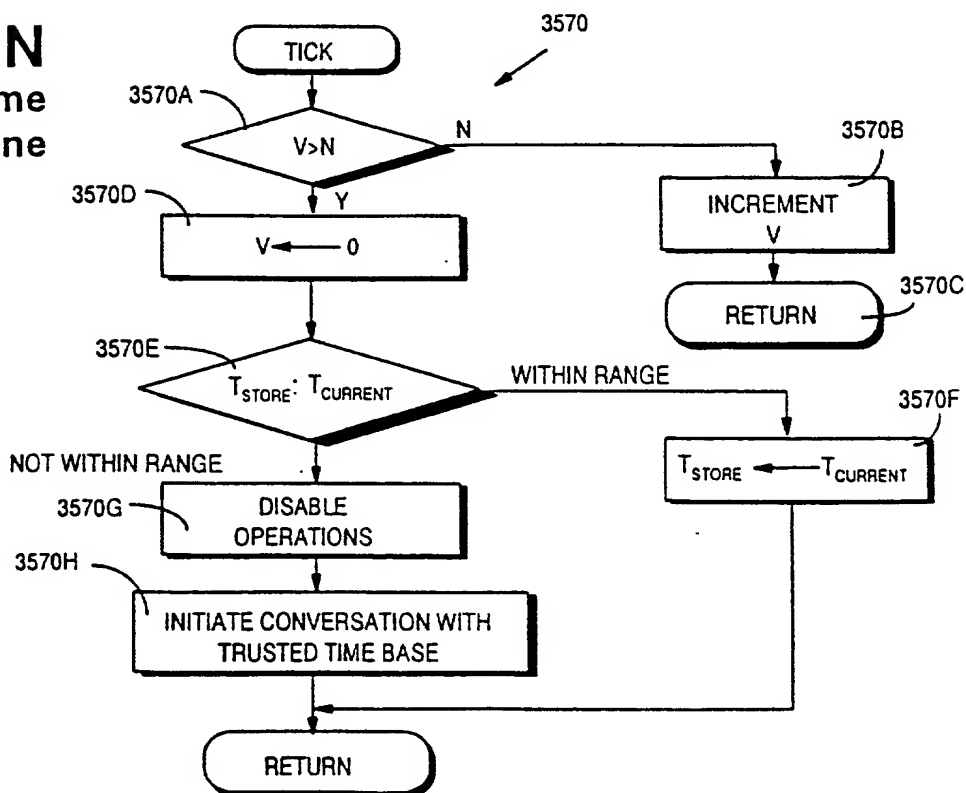


DRAFT BUDGET
AMT DRAFTED
ΔT
T _{STORE}

Fig. 69O

10027986-122401

Fig. 69N
Example Time
Check Routine



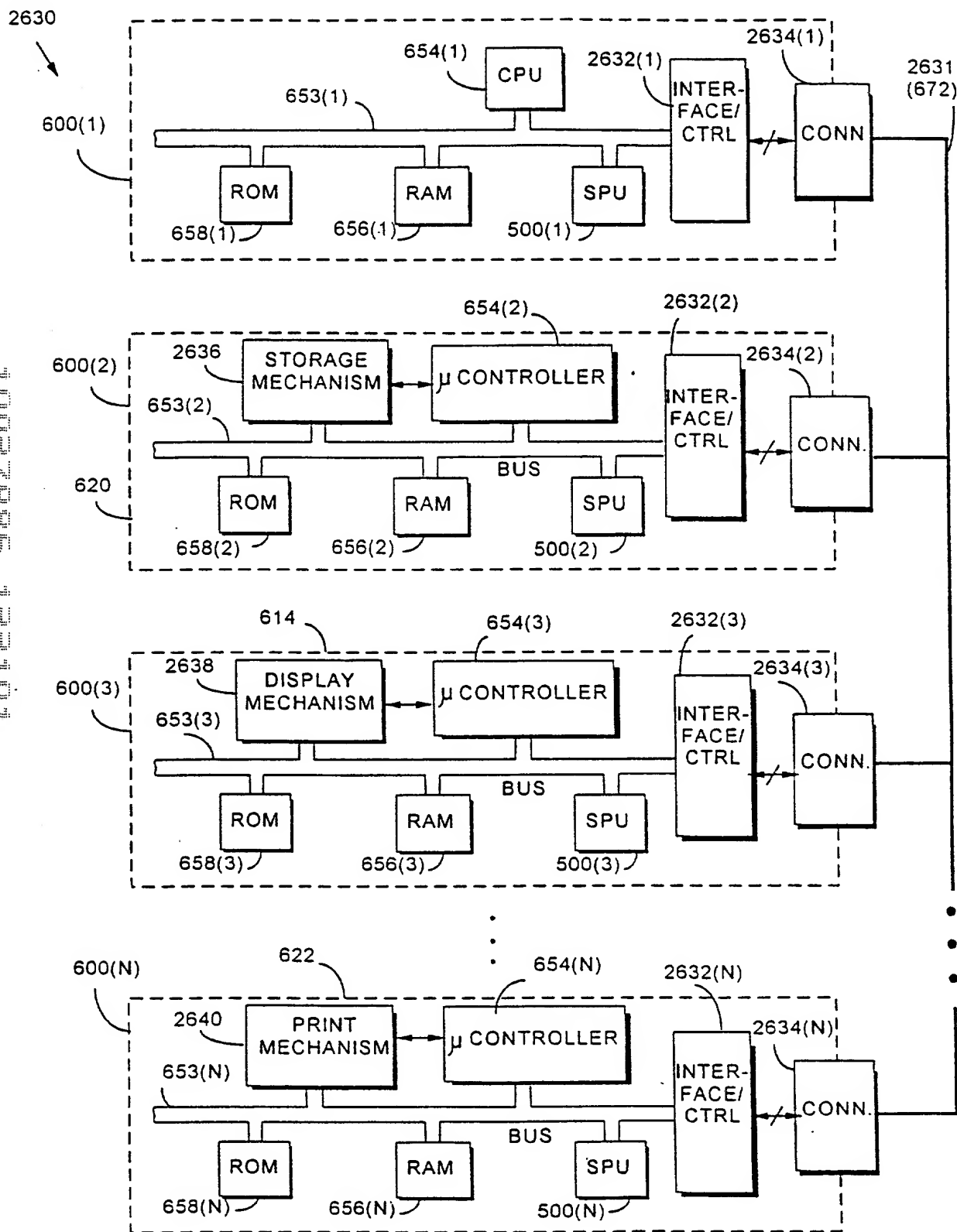


FIG. 70

FIG. 70A

FIG. 70A

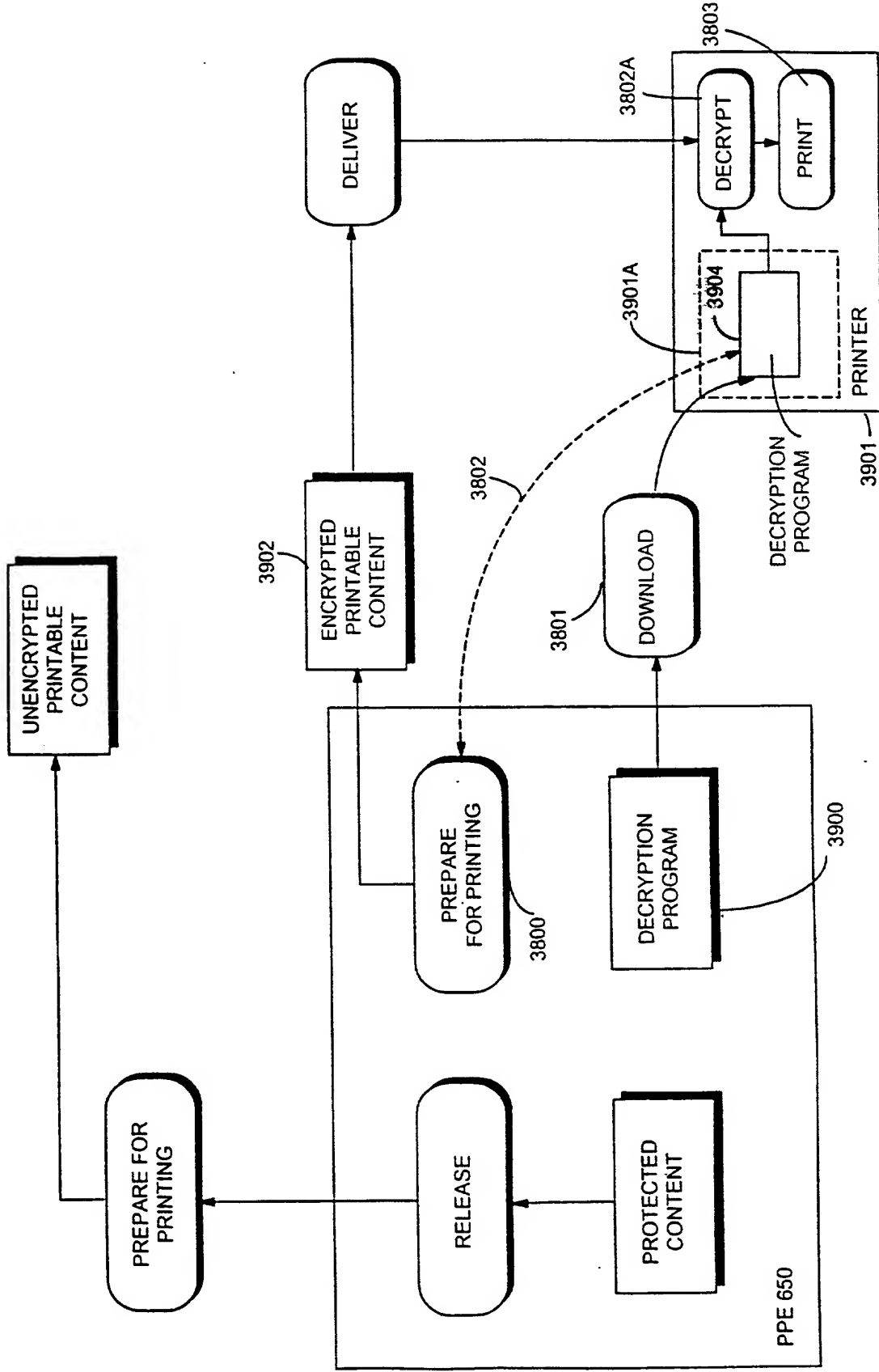


FIG. 70B

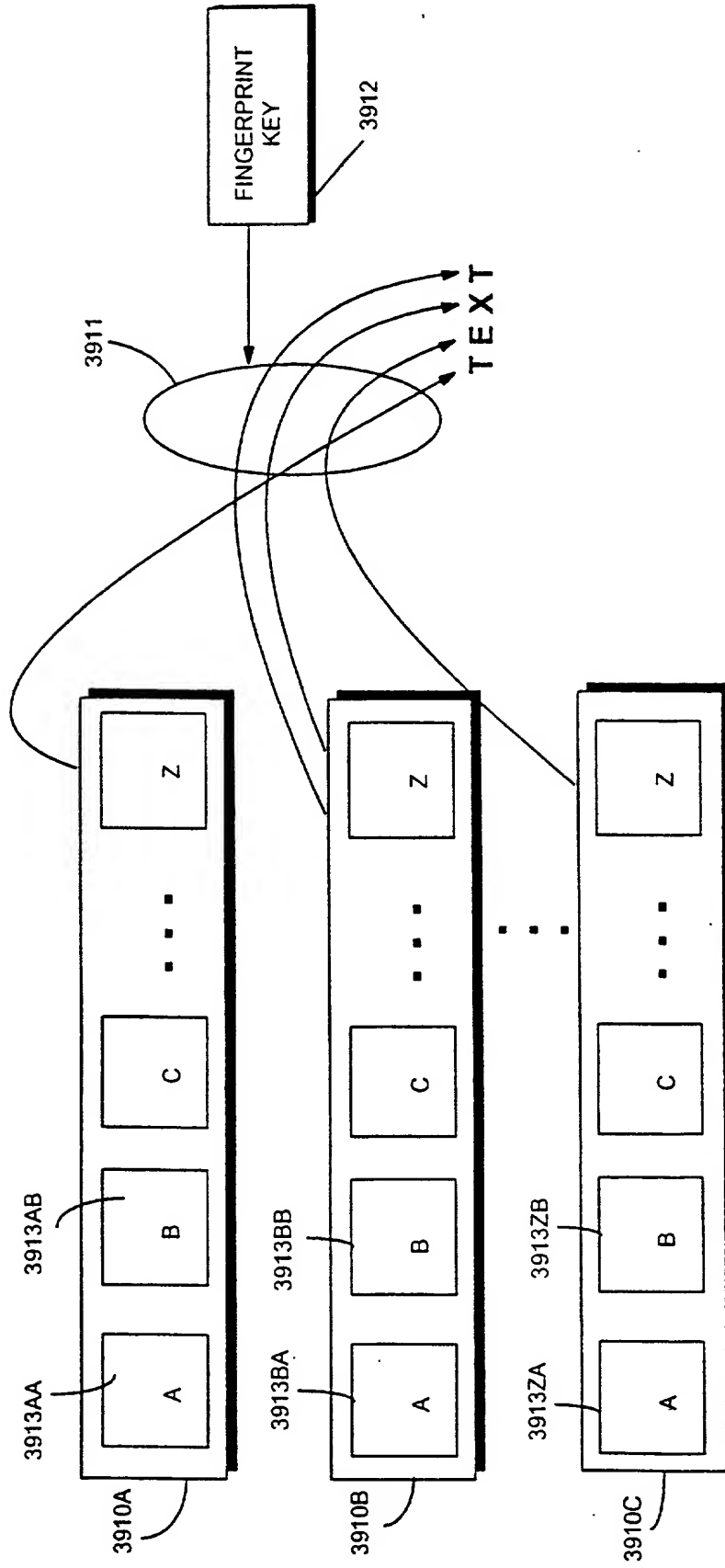


FIG. 70C

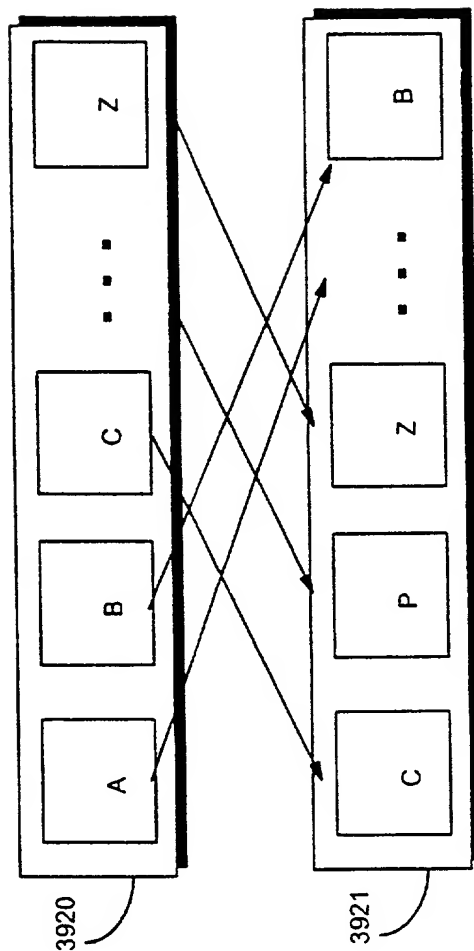
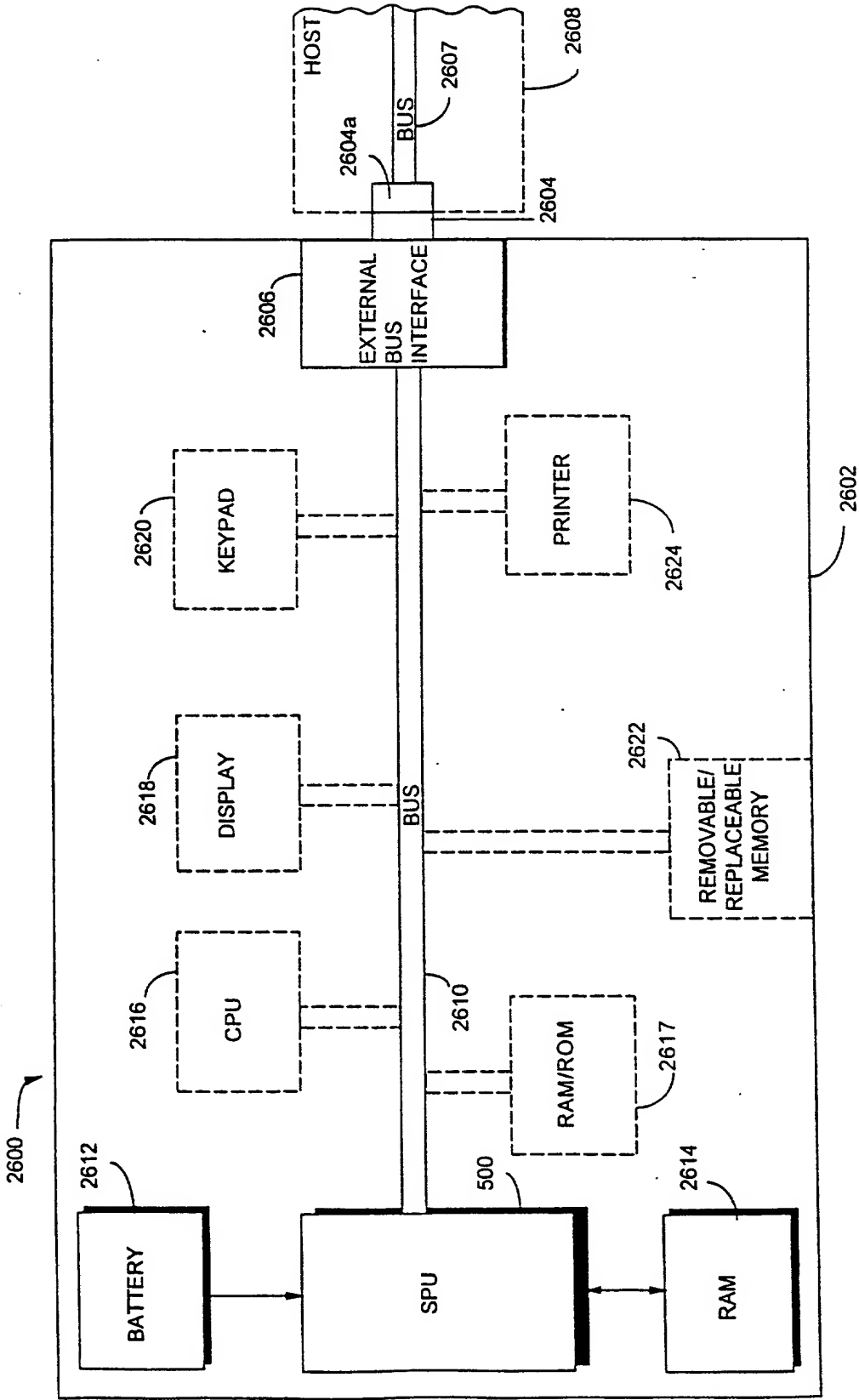


FIG. 71

PORTABLE APPLIANCE



LOG IN USER INTERFACE

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A login interface window with a title bar. It contains two input fields: 'USER NAME:' with the text 'SHEAR, V.' and 'PASSWORD:' with five asterisks. To the right of these fields are three buttons: 'LOGIN', 'CANCEL', and 'HELP'. At the bottom left, there is a checkbox labeled 'LOGIN AT STARTUP'.

FIG. 72A

FIG. 72B

A dialog box titled 'YOU HAVE REQUESTED THESE PROPERTIES:'. It features a warning icon (triangle with an exclamation mark) on the left. Below the title, the text 'LOONEY TUNES NEWS!' is underlined. To the right of this text are two buttons: 'APPROVE' and 'SUSPEND'. Above these buttons is a 'CANCEL' button. At the bottom left is a button labeled 'PROPERTY INFO'. In the center, it says 'Your Cost: \$7.50'. At the bottom right, it says 'MORE OPTIONS' followed by a question mark icon. Reference numerals 2660, 2662, and 2664 point to the 'CANCEL', 'APPROVE', and 'MORE OPTIONS' elements respectively.

FIG. 72C

1007967201

SET LIMITS:

SESSION DOLLAR LIMIT: \$

TRANSACTION DOLLAR LIMIT: \$

TIME LIMIT (IN MINUTES):

UNIT LIMIT:

2666

2674

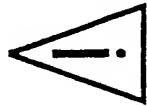
2668

2670

2672

FIG. 72D

FIG. 72D



YOU HAVE REQUESTED THESE PROPERTIES:

LOONEY TUNE NEWS!

PROPERTY INFO

YOUR COST : \$7.50

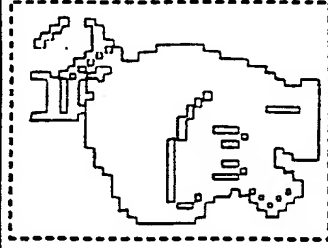
APPROVE

SUSPEND

CANCEL

More Options ☒

Show Thumbnail



PROPERTY:	SIZE:	PUBLISHER:	AMOUNT:	UNITS:	COST/UNIT:	TYPE:	USE?	LINKS:	HIST:
CHUCK JONES BIOGRA...	256KB	WARNER NEW MEDIA	64	KBYTE	\$1.25	PREVIEW	✓	●	
▼ BUGS BUNNY.JPE...	1MB	WARNER NEW MEDIA	1	RECORD	\$5.00	DISPLAY	✓	●	
BUGS BUNNY.JPEG...	1MB	WARNER NEW MEDIA	10	RECORD	\$3.50	DISPLAY		●	
BUGS BUNNY.JPEG...	1MB	WARNER NEW MEDIA	25	RECORD	\$2.50	DISPLAY		●	
FRIZ FRELENG BIOGRA...	256KB	WARNER NEW MEDIA	120	SECTOR	\$5.00	PRINT			
TEX AVERY BIOGRAP...	256KB	WARNER NEW MEDIA	50	PERCENT	\$2.50	COPY			
► DUCK! RABBITI DU...	64MB	WARNER NEW MEDIA	7.0	MINUTE	\$7.50	COPY-PRO			
MEL BLANC BIOGRAPH...	256KB	WARNER NEW MEDIA	1	SPECIAL	\$25.25	INSTALL			
LOONEY TUNES DATAB...	600MB	WARNER NEW MEDIA	1	OBJECT	\$2000.00	ALL			
SET LIMITS...	SHOW BUDGETS	ACQUIRE BUDGET...	HISTORY ..	TRANSFER..	PREFERENCES	FEEDBACK	HELP'		

FIG. 73

10027986-12101

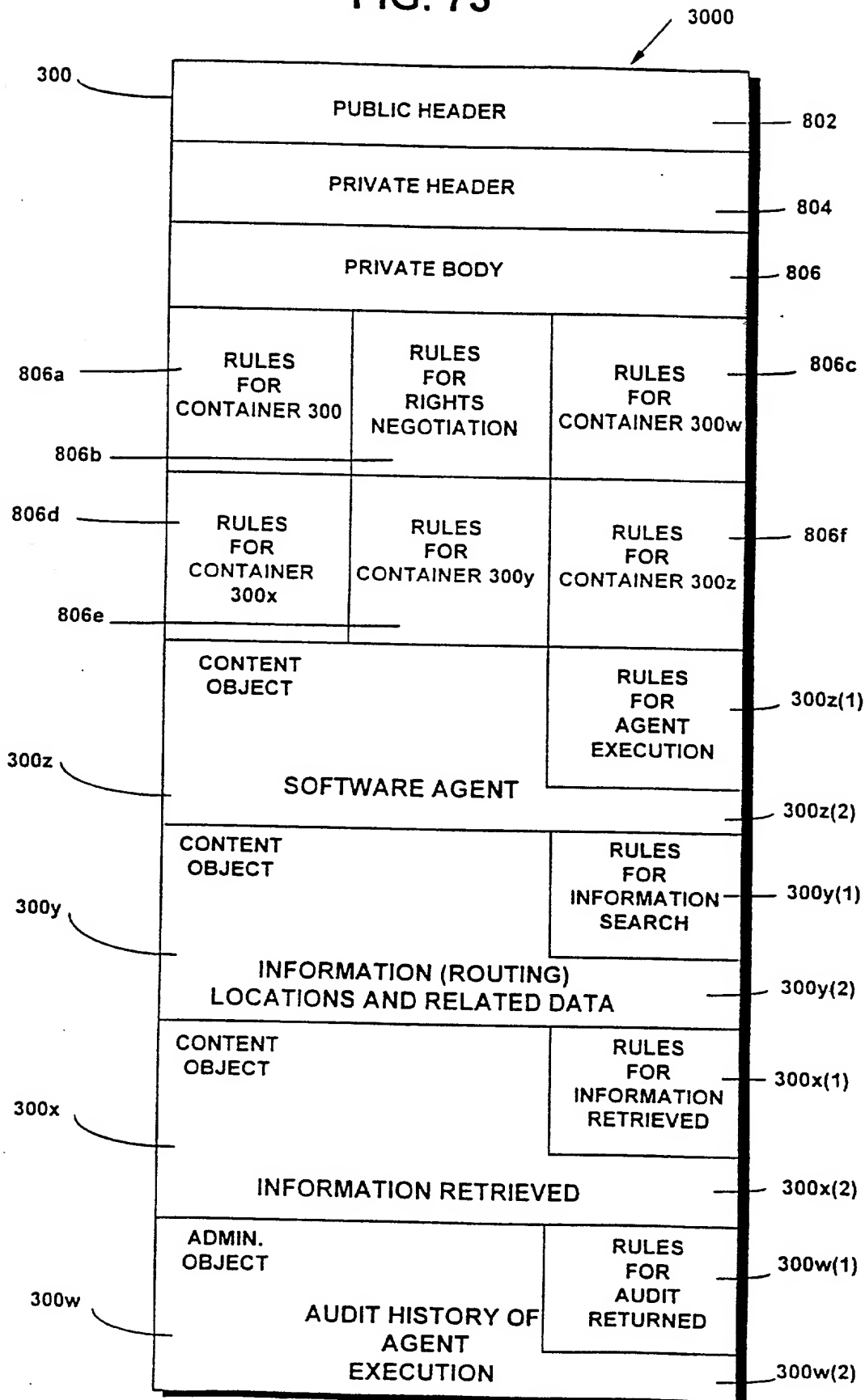


FIG. 74

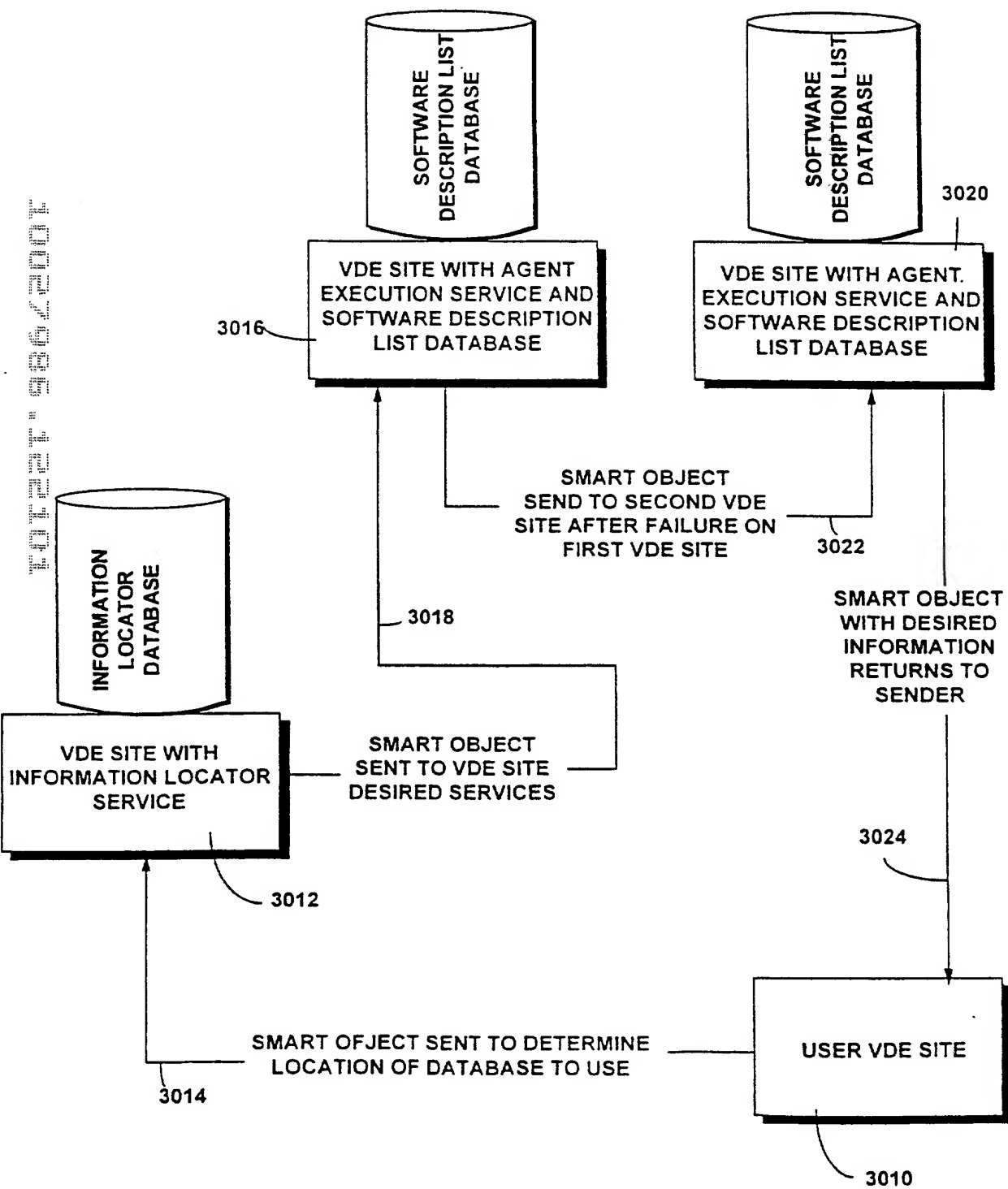


FIG. 75A

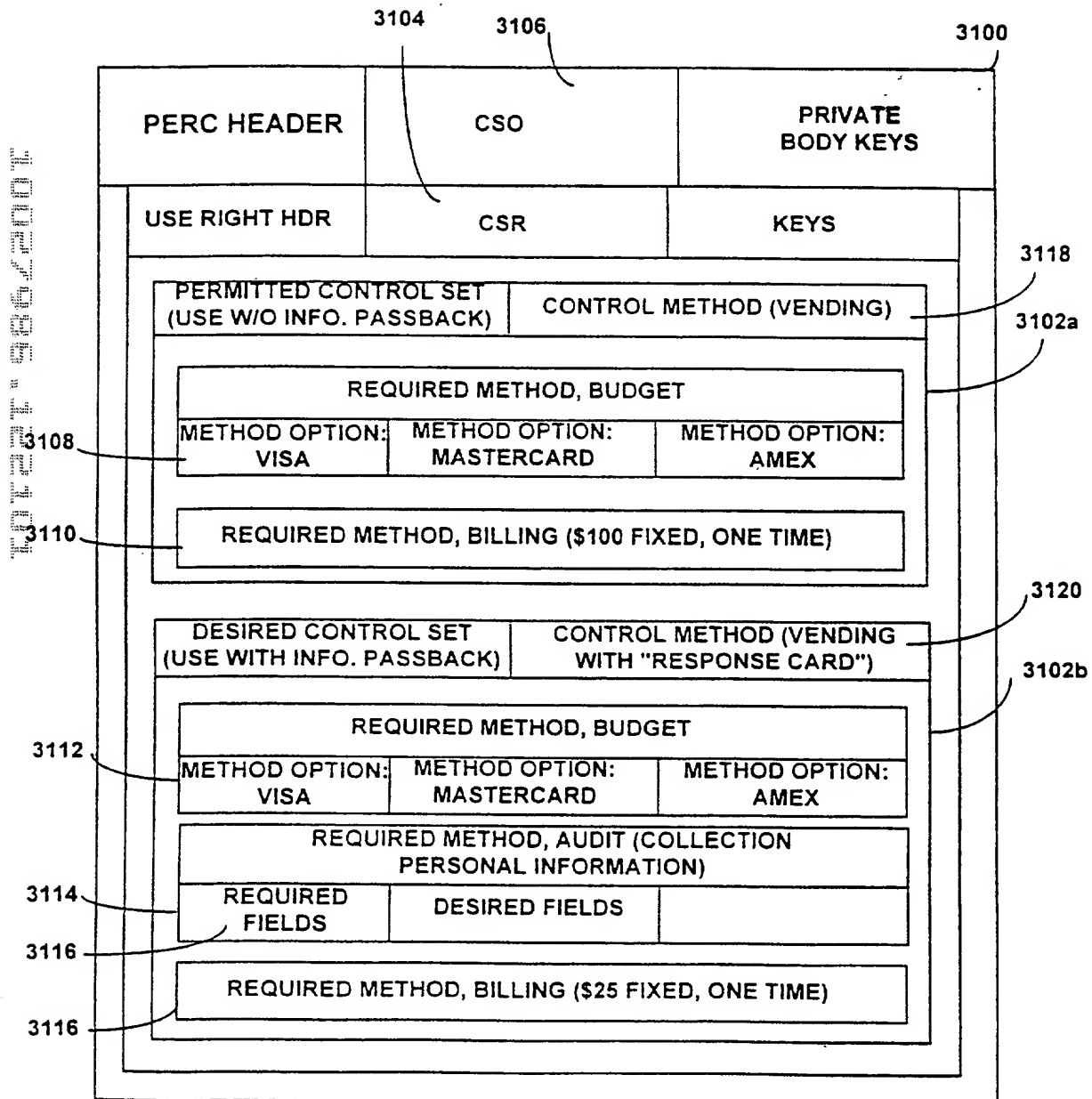


FIG. 75B

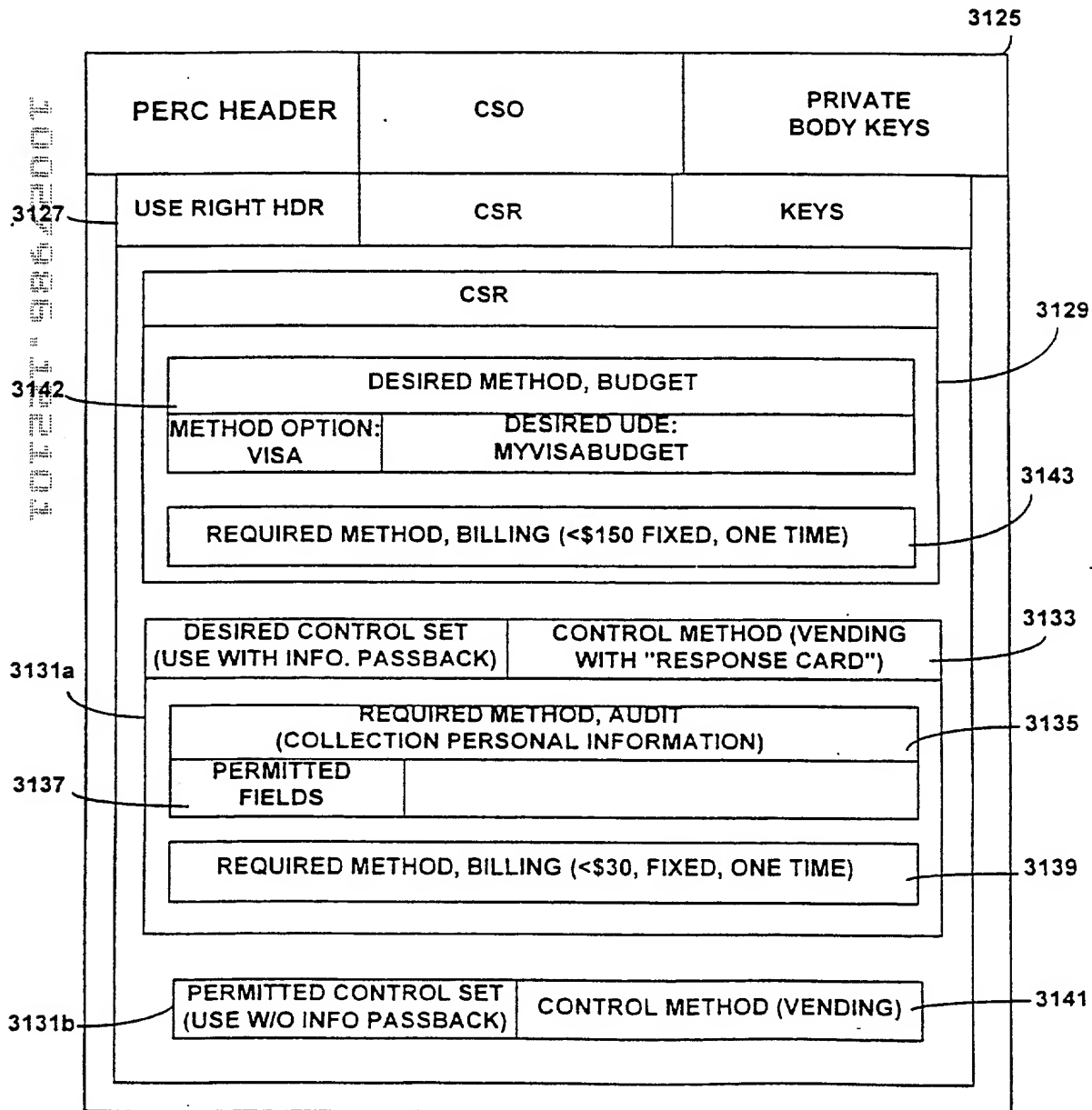


FIG. 75C

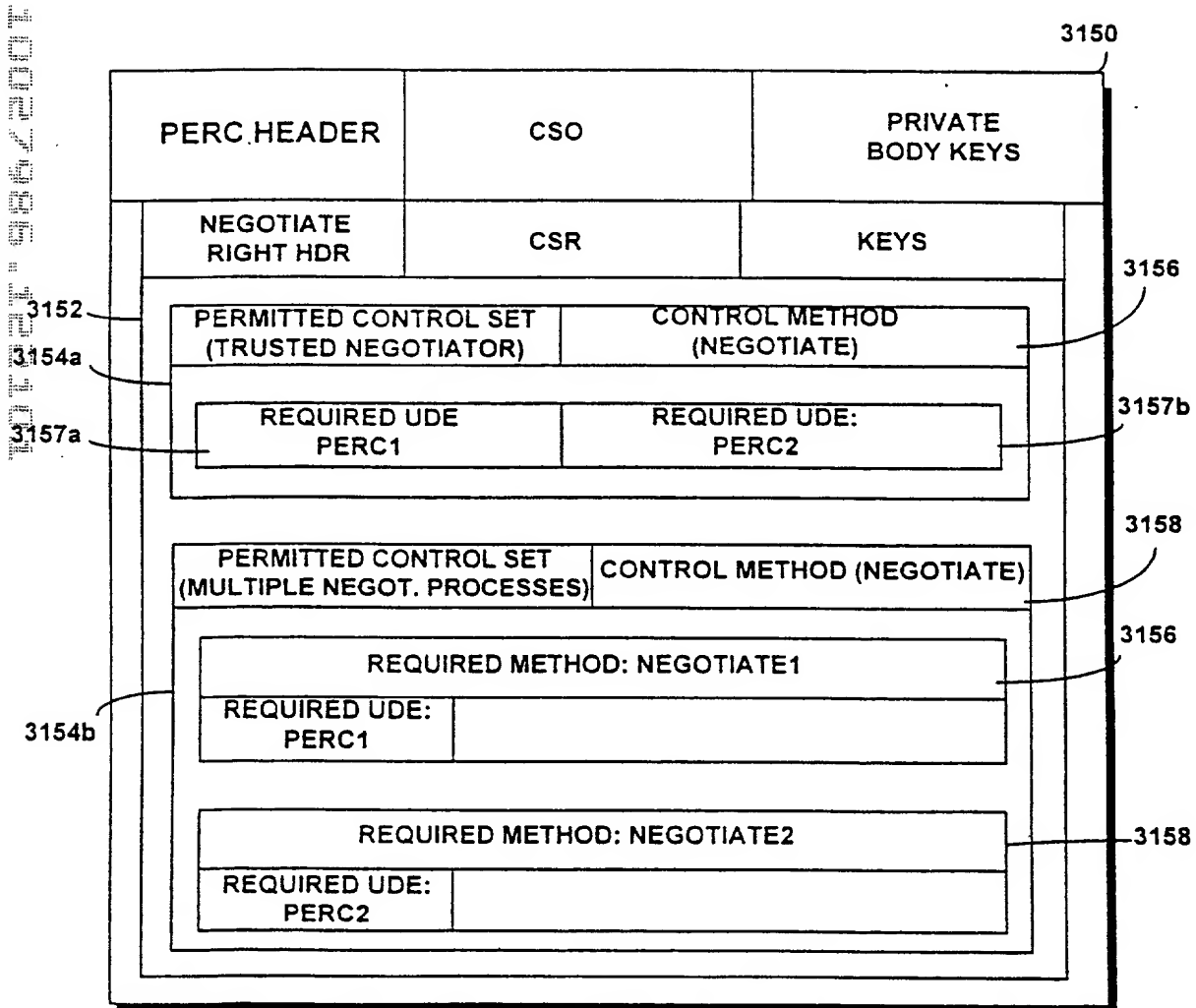
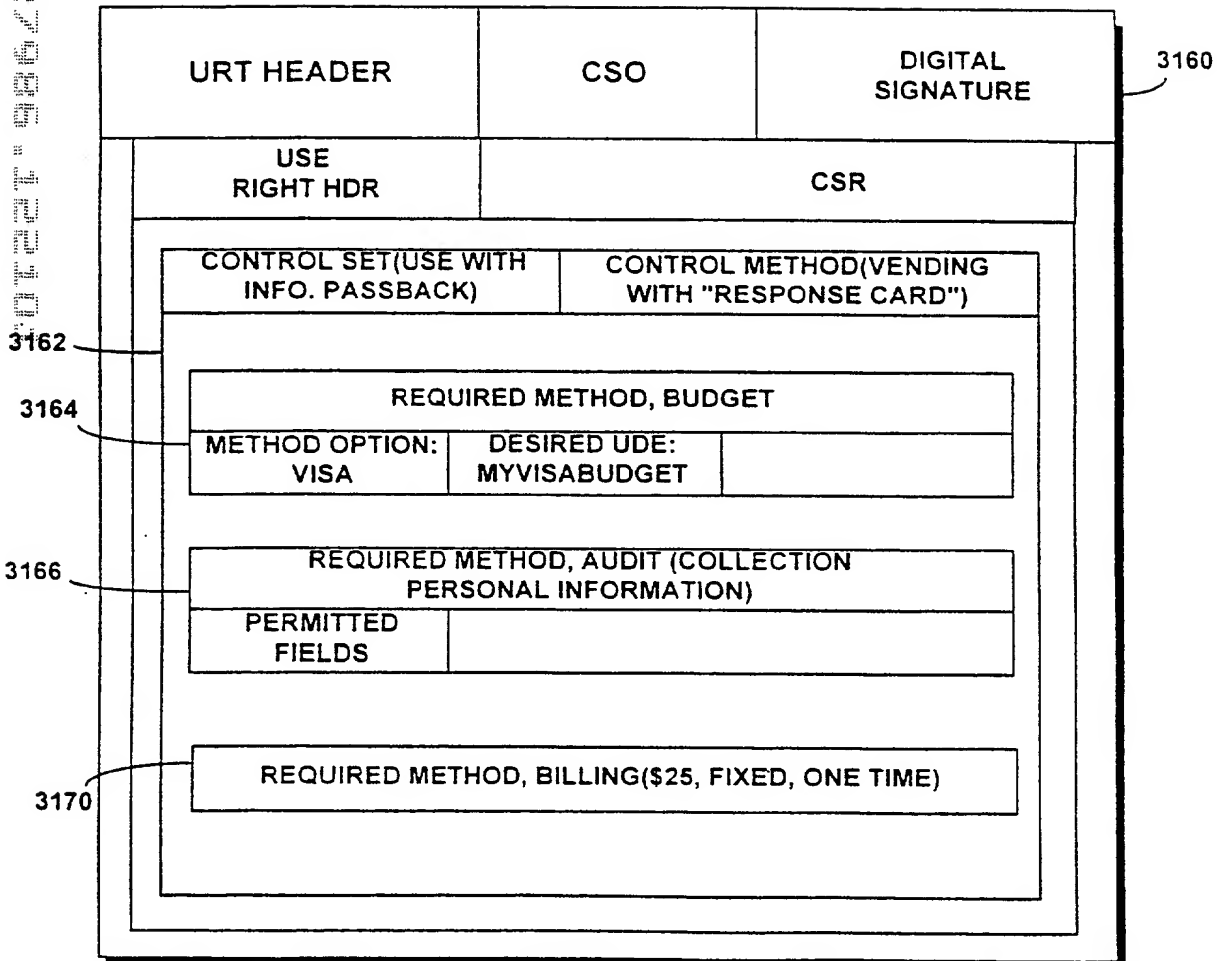


FIG. 75D

10027986-12210



10027986-122001

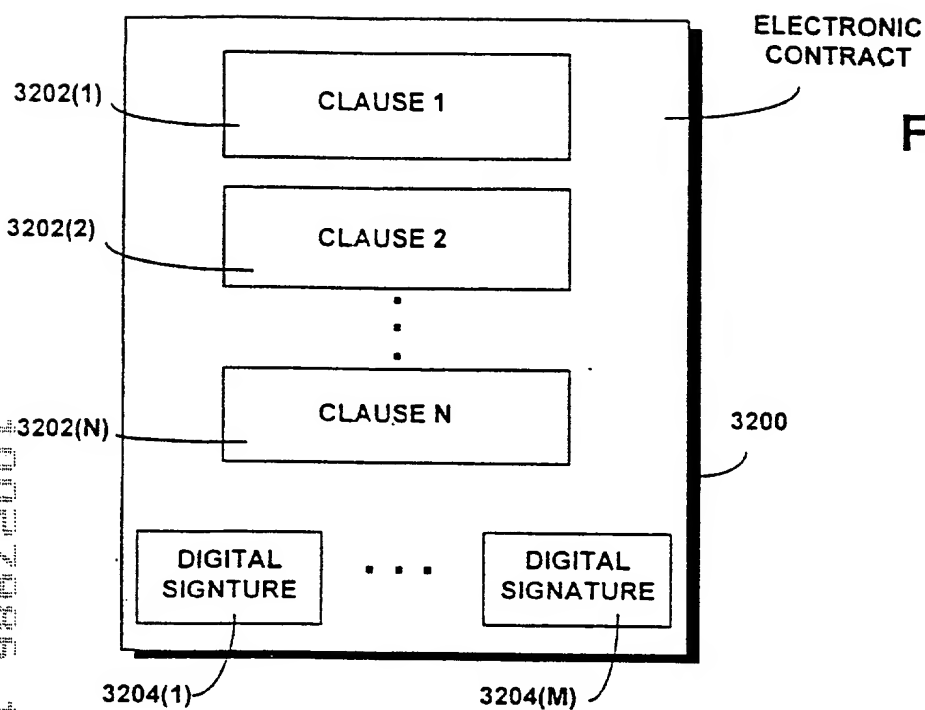


FIG. 75E

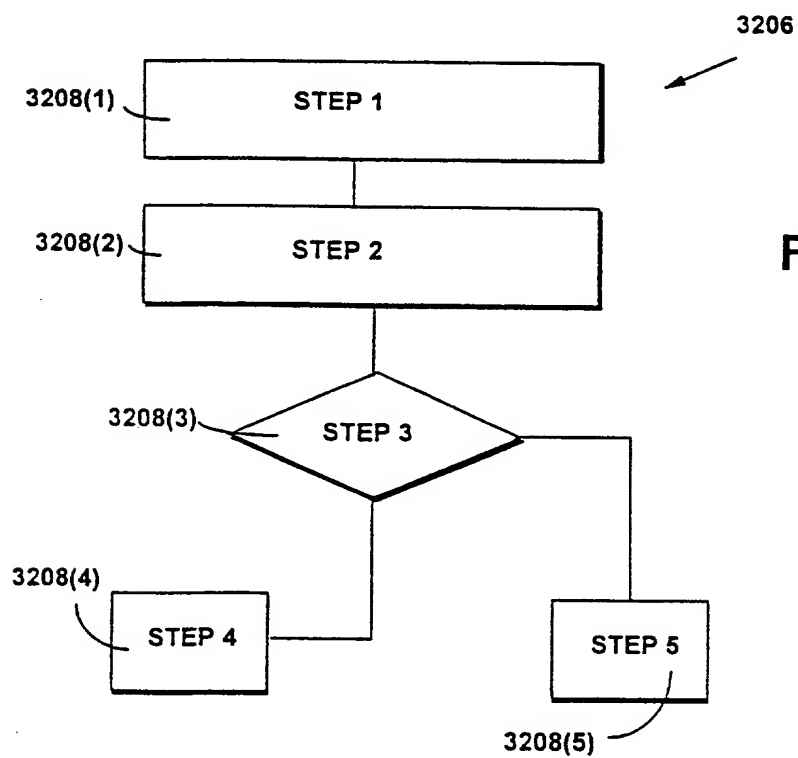


FIG. 75F

FIG. 76A

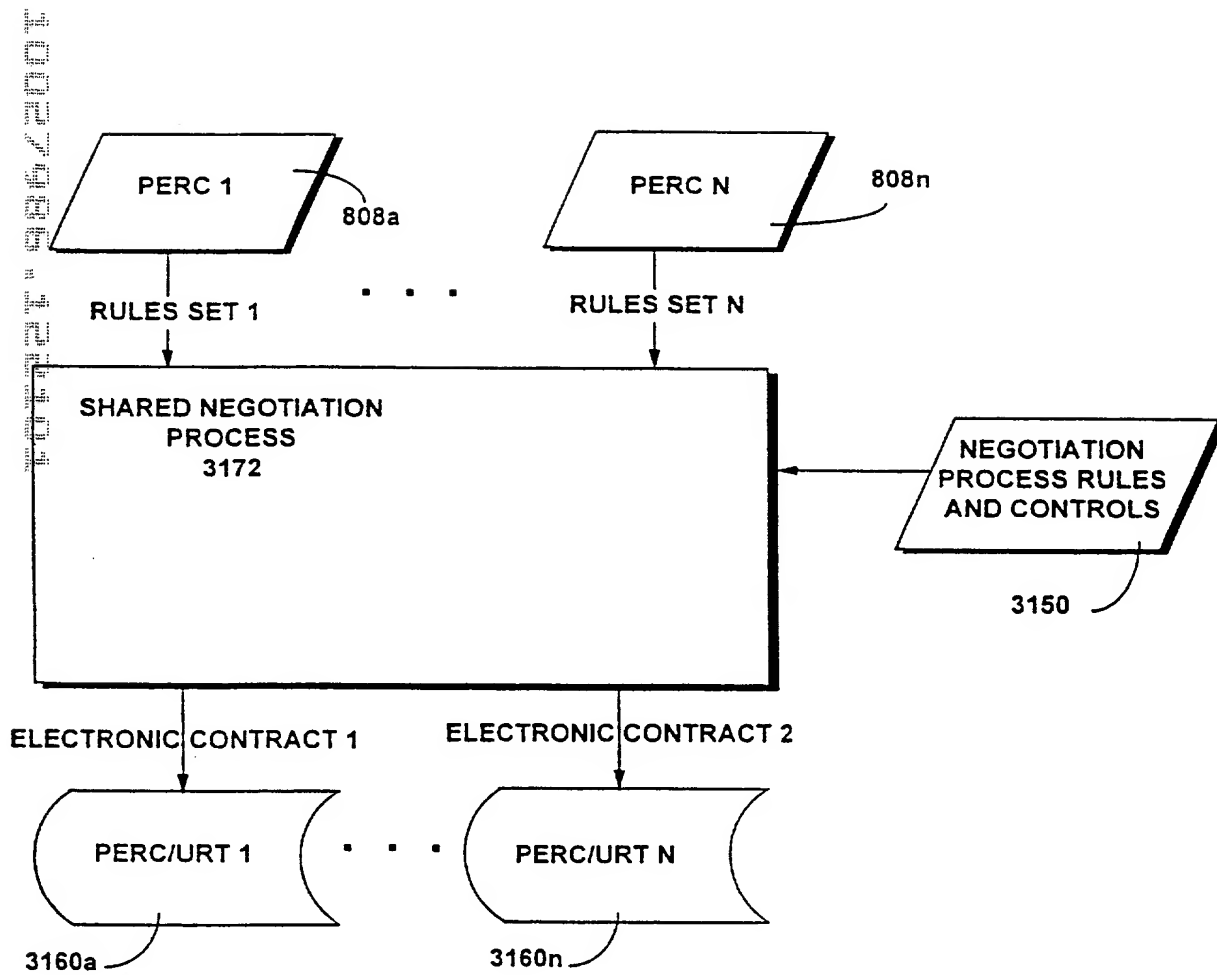


FIG. 76B

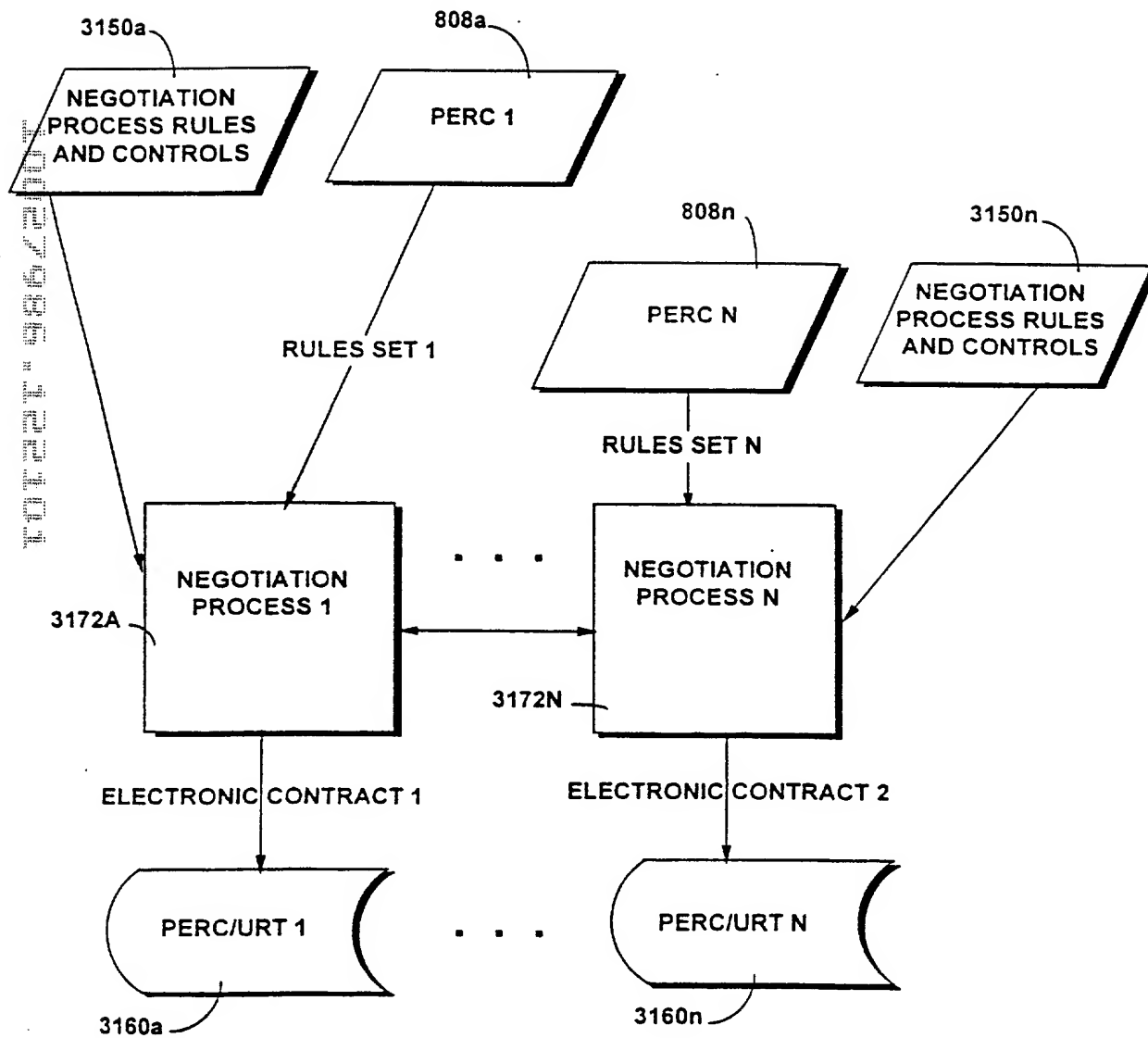
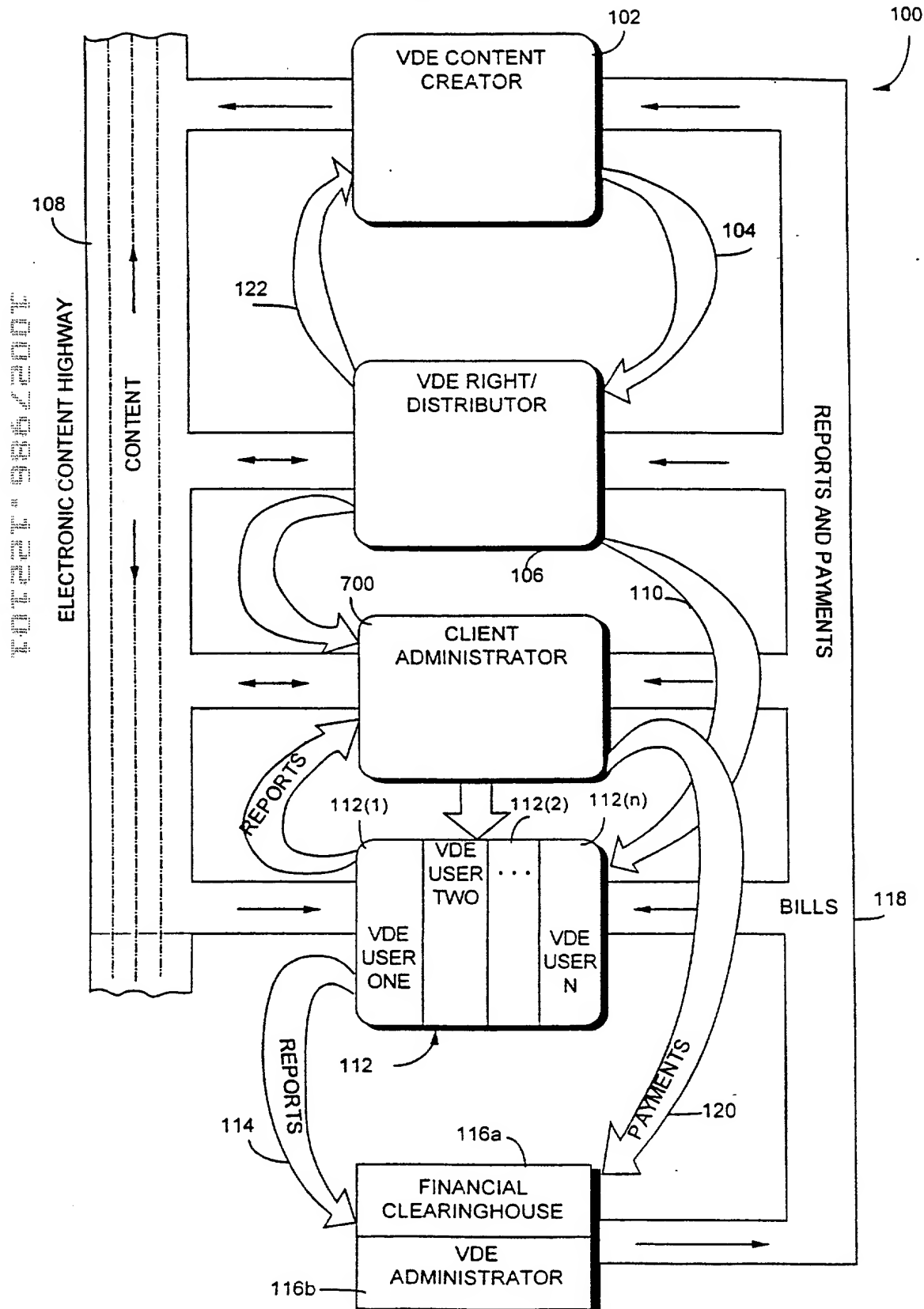


FIG. 77



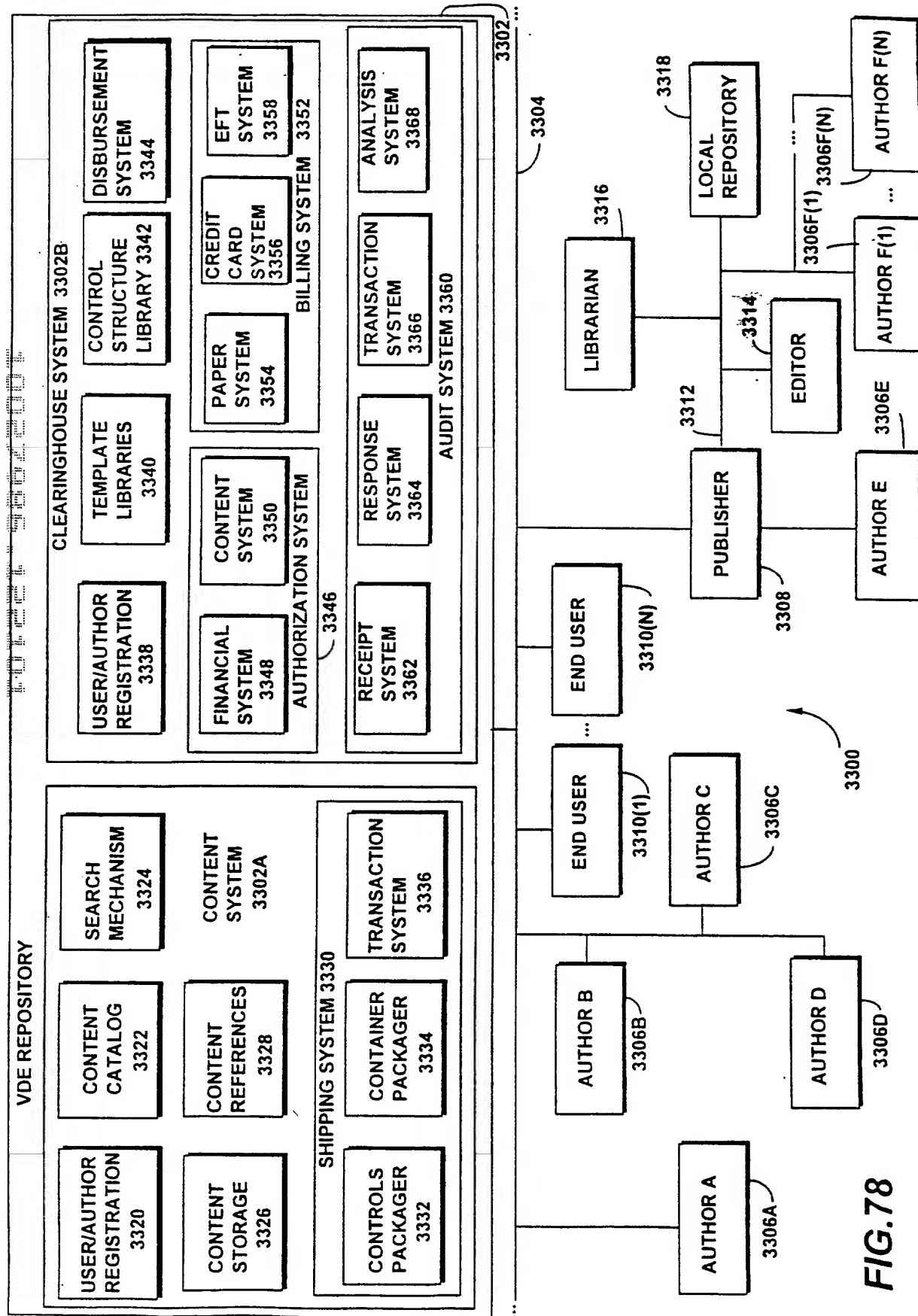


FIG. 78

FIG. 80

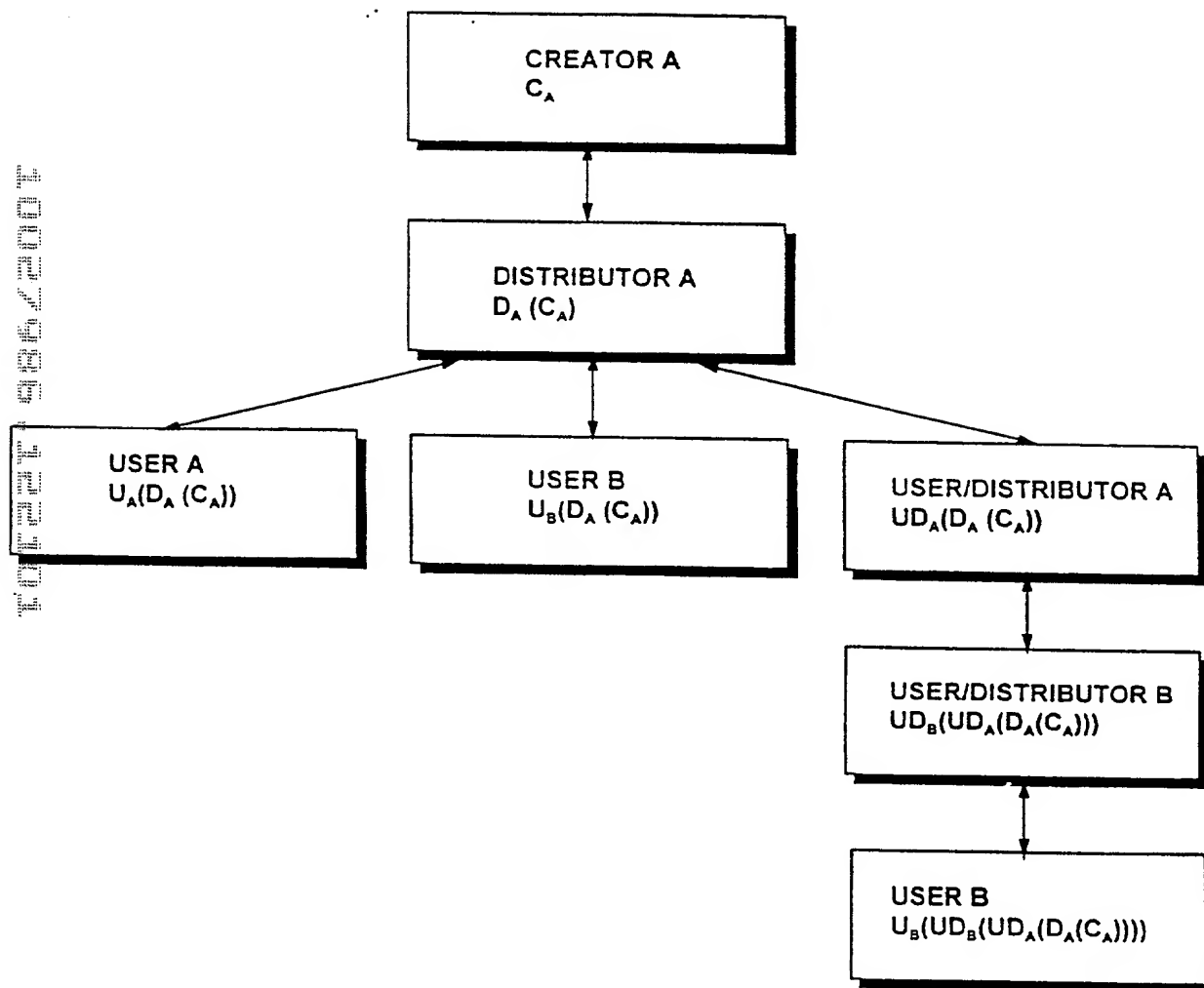
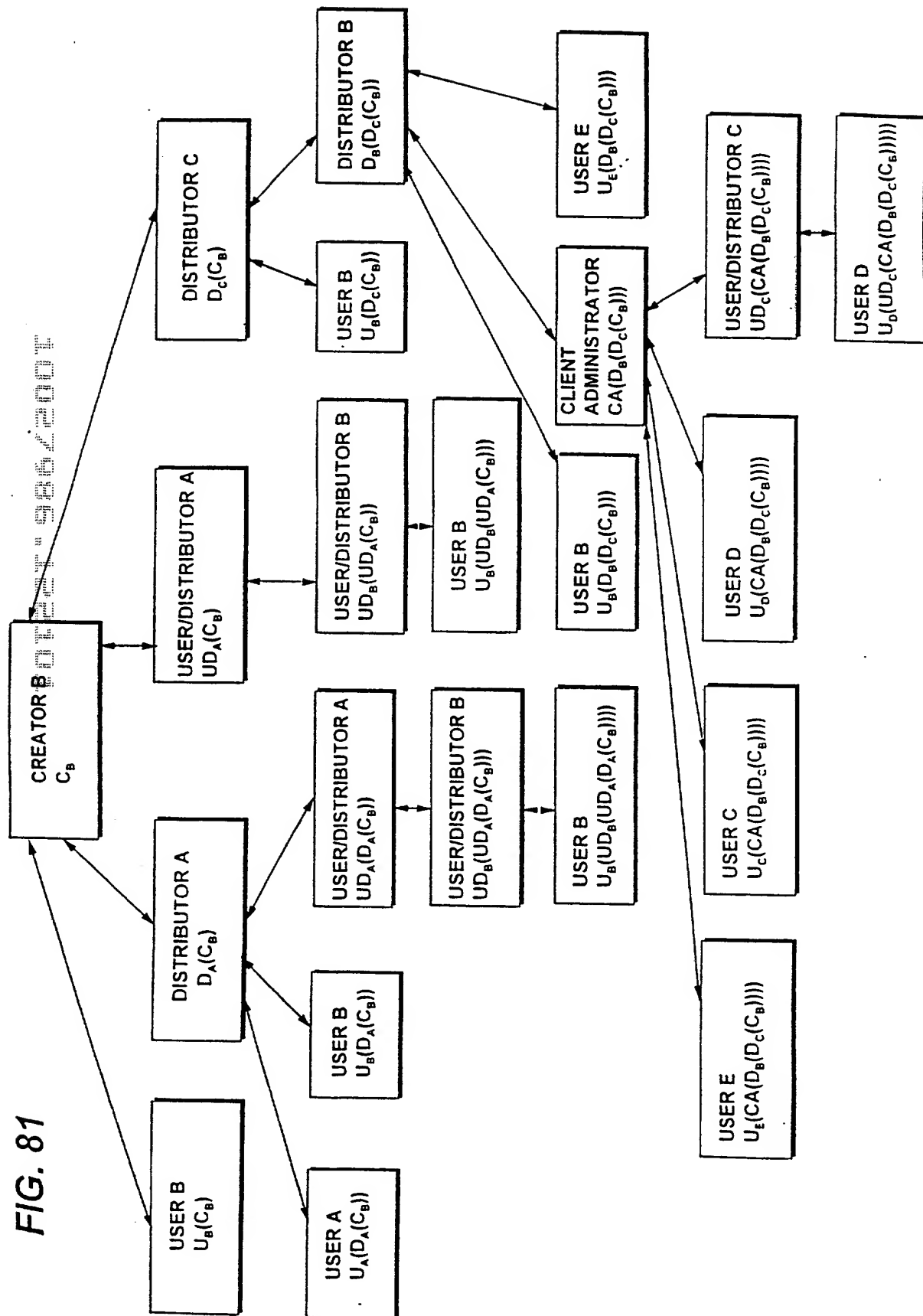


FIG. 81



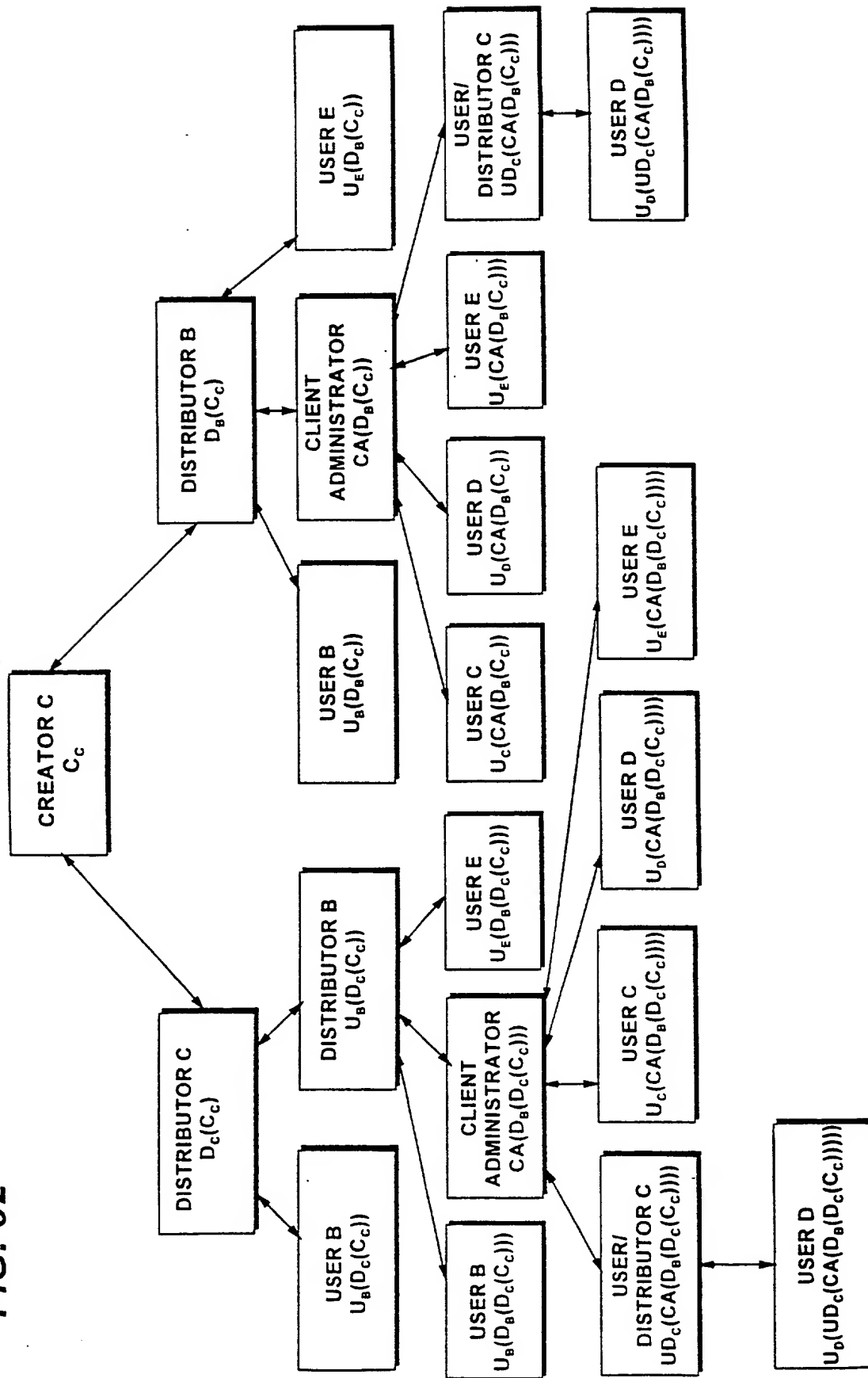


FIG. 83

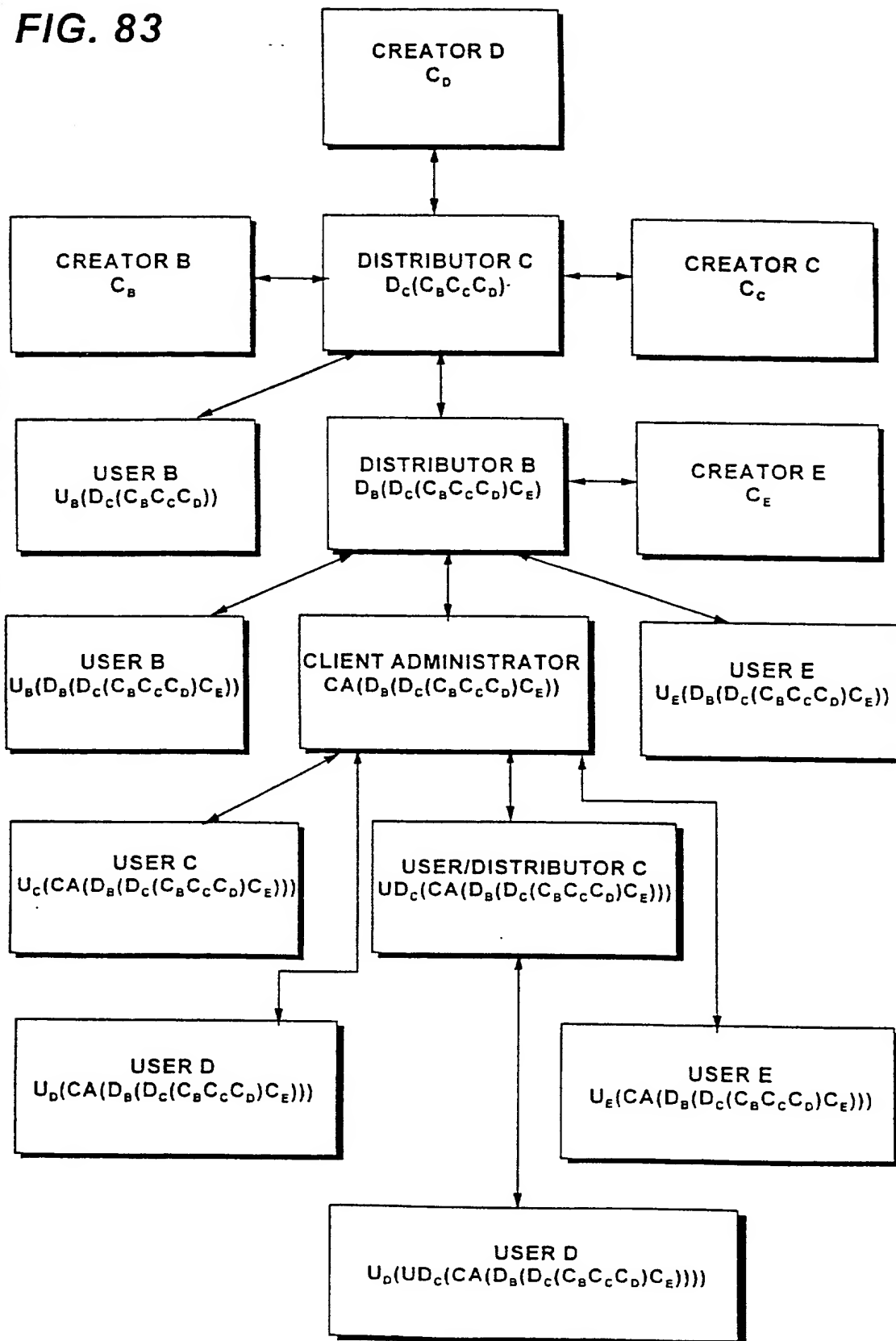


FIG. 84

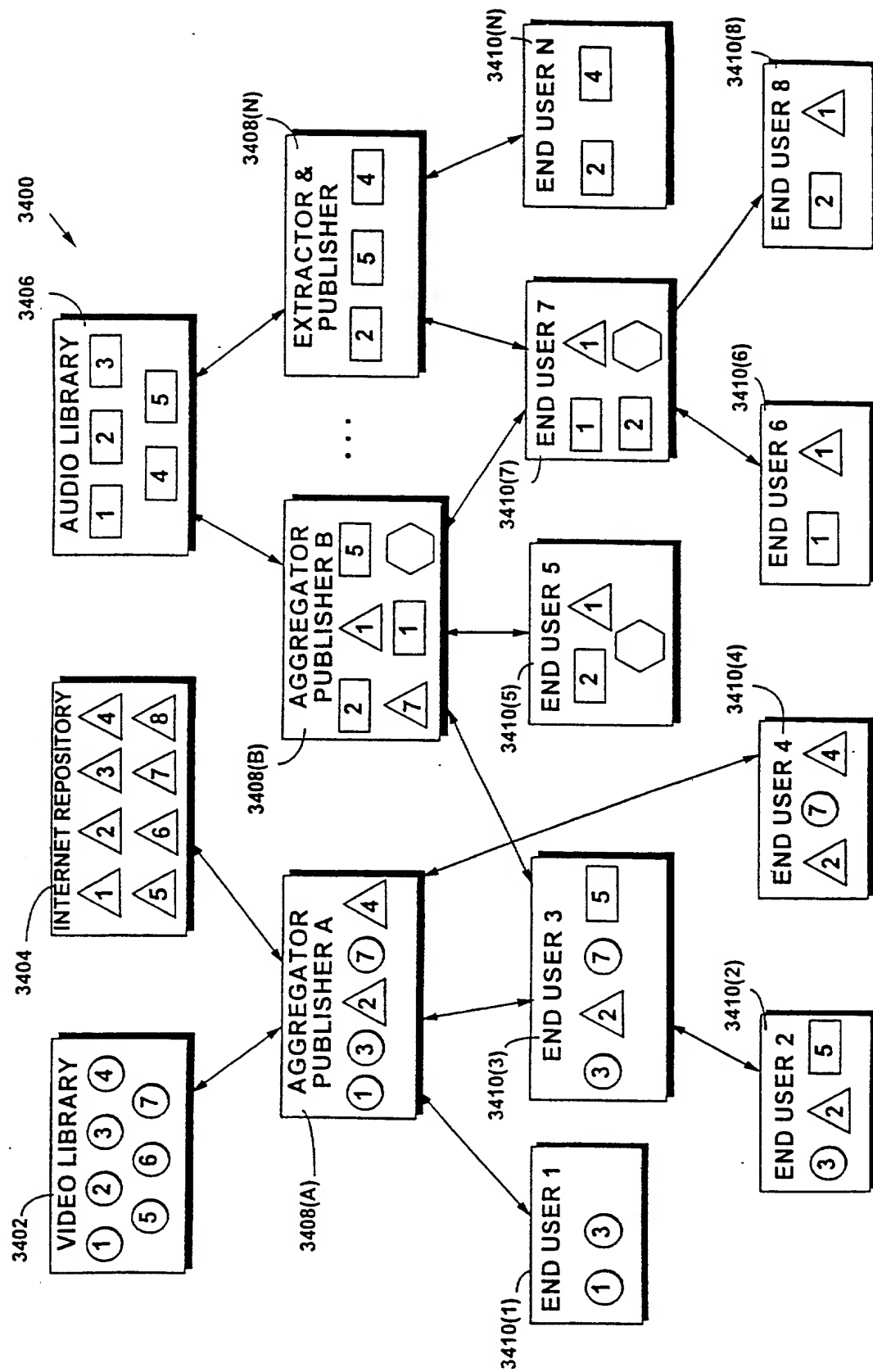
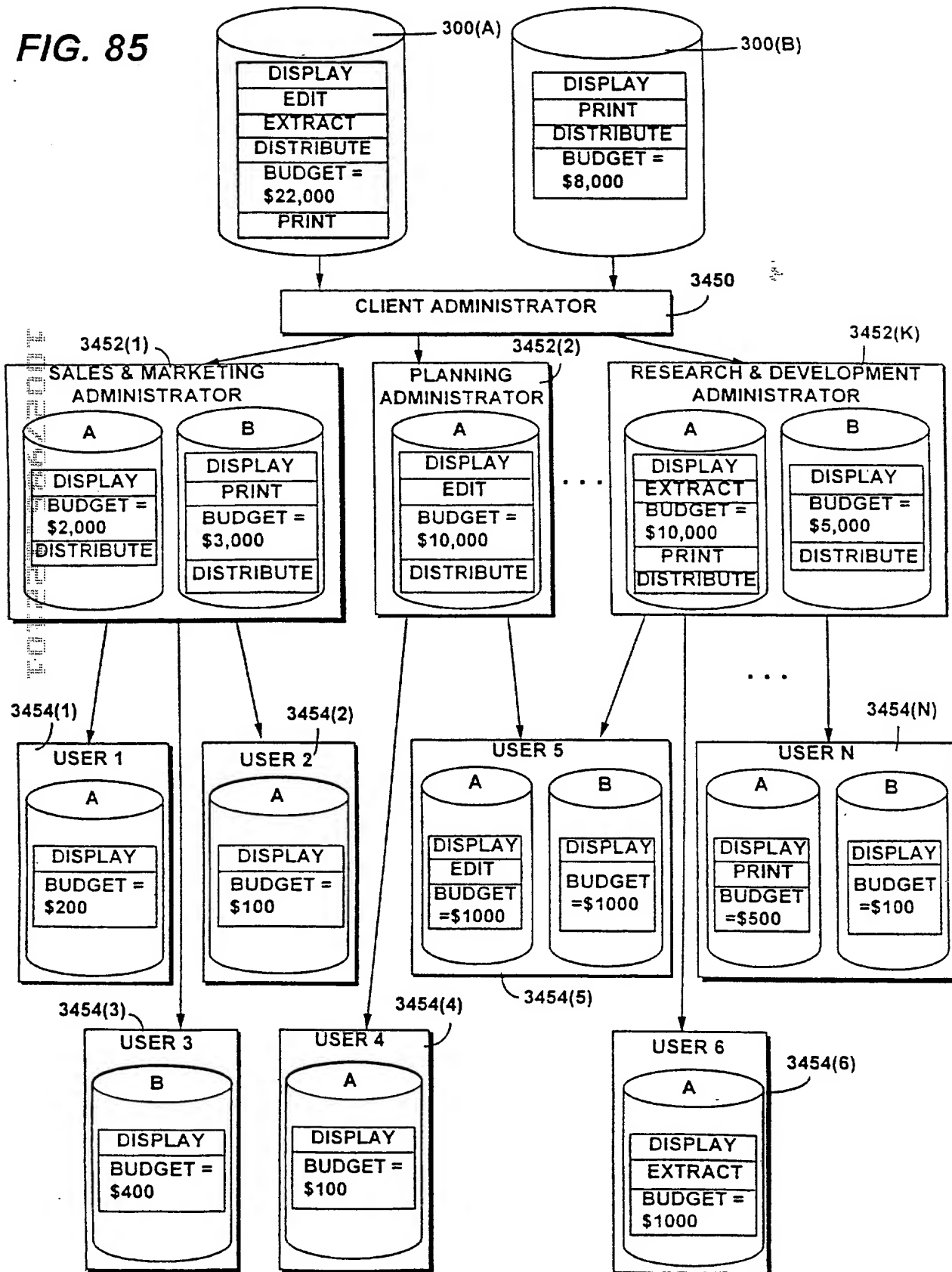


FIG. 85



3500-



7



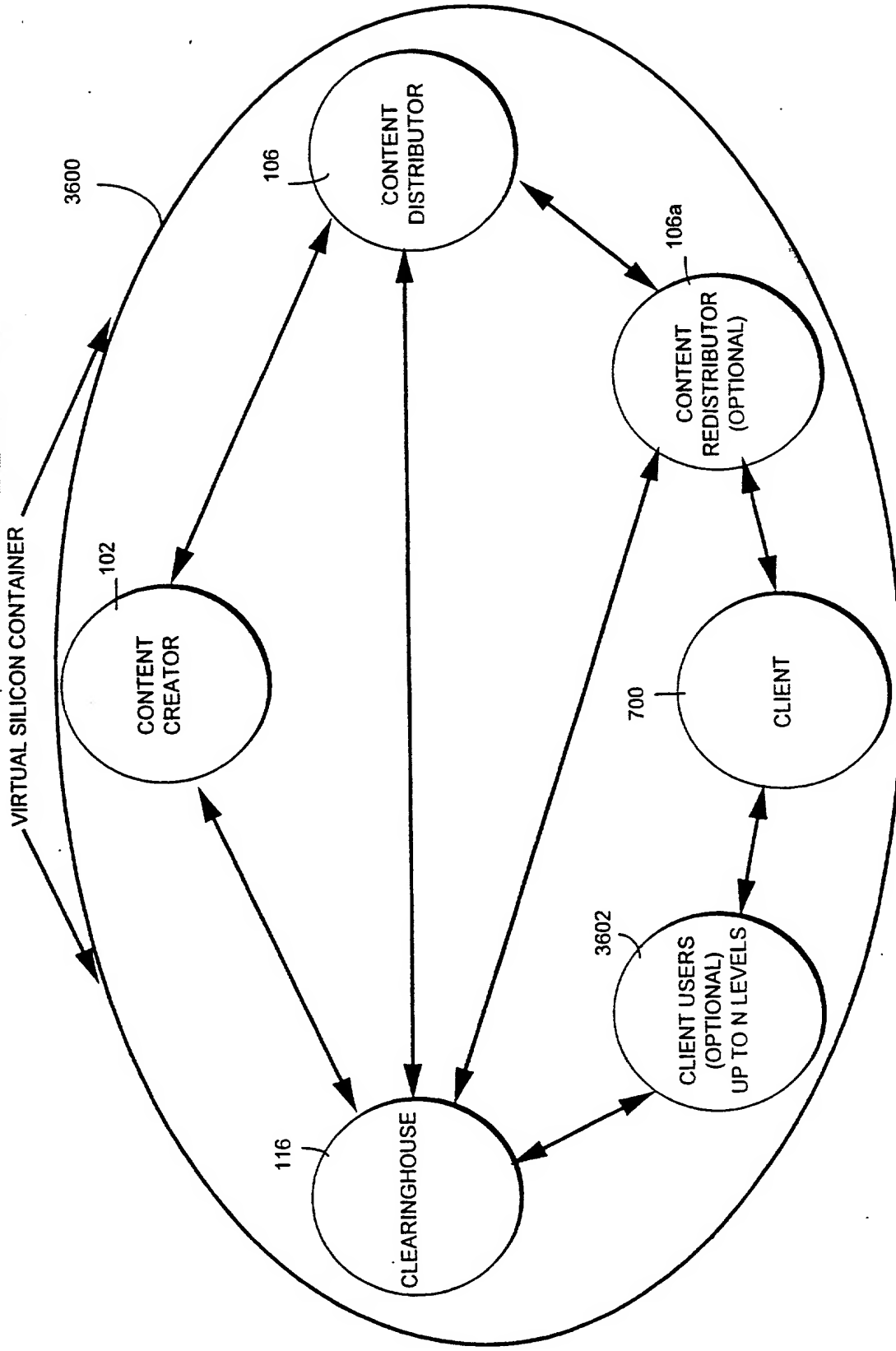


FIG. 87